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ABSTRACT

EACH OF THE THREE CHAPTERS IN THIS DISSERTATION IS A SEPARATE CONSIDERATION OF ONE ASPECT OF LANGUAGE ACQUISITION BY TENEJAPA TZELTAL CHILDREN. CHAPTER I PLACES THE SPECIFICATION OF INPUT SOURCES AND CONTEXTS IN A MATRIX OF THE ETHNOGRAPHIC DESCRIPTION OF THE CHILDHOOD PORTION OF THE LIFE CYCLE IN TENEJAPA. BELIEFS AND PRACTICES THAT HAVE A DIRECT OR INDIRECT BEARING ON LANGUAGE ACQUISITION ARE EMPHASIZED. CHAPTER II DEALS WITH SOME FACETS OF TZELTAL PLANT TAXONOMY AND NOMENCLATURE, EXAMINING INTERCONNECTIONS BETWEEN THE TWO SYSTEMS, AND CLASSIFIES CHILDREN'S RESPONSES WHEN IDENTIFYING PLANTS IN AN ATTEMPT TO ISOLATE TRENDS OF LEXICAL DEVELOPMENT. CHAPTER III DEALS WITH PROBLEMS AND RESULTS OF ANALYZING DATA GATHERED, SUGGESTS A PRIORITY IN FOCUS OF PERFORMANCE OVER COMPETENCE, AND PROPOSES THE PRESENCE IN YOUNG CHILDREN OF AN AURAL ANALOGUE TO THE PHENOMENON OF EIDETIC IMAGERY WHICH BOLSTERS THE HYPOTHESIS THAT THERE IS A CRITICAL AGE FOR FIRST LANGUAGE LEARNING. APPENDICES PRESENT (1) THE ORTHOGRAPHY OF TZELTAL WORDS USED AND A BRIEF OUTLINE OF SOME OF THE MORE INTERESTING FEATURES, (2) SOME NOTES ON THE FIELD SITUATION, (3) A COMPILATION OF THE PLANT IDENTIFICATION DATA USED IN THE ANALYSIS OF CHAPTER II, AND (4) A COMPILATION OF THE ELICITED IMITATION DATA THAT WAS USED IN THE ANALYSIS OF CHAPTER III. (DO)

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LANGUAGE ACQUISITION BY TENEJAPA TZELTAL CHILDREN

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of the requirements for the degree of
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PREFACE

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0. INTRODUCTION

This is a study of selected aspects of language acquisition by Tzeltal children. The data on which it is based were gathered during a year of field research conducted in the parajes *mahosik* and *cahal č'en*, outlying communities in the municipio of Tenejapa, which is located to the Northeast of San Cristobal las Casas in Chiapas, Mexico.

Tzeltal is a member of the Mayan family of languages and is spoken by approximately 100,000 persons in the central highland region of Chiapas. There are about 10,000 Indians living in Tenejapa and these speak the Tenejapa dialect of Tzeltal. Most are monolinguals; a few speak the local Spanish with considerable fluency, and many know just a few words of Spanish. Women tend to conceal their knowledge of even a few Spanish words, men to display it.

0.1 Theoretical background

Some basic questions implicit in the study of language development are: What is it that a child learns when he is learning to speak? Within what limits can level of biological maturity accelerate or retard language learning? To what extent can aspects of the natural and social environment facilitate or inhibit the rate and degree of language development? What is the "normal" rate of language development for an individual learning a particular language, and what linguistic indices can be used to isolate stages of development for a determination of this rate? Does the structure of the language being acquired influence rate of development? Needless to say, these questions cannot be answered directly. The answers turn on the definitions employed for such important words as language, structure, maturity, developmental stage, environment, and learning. New questions are raised in the attempt to provide definitions; measures and indices are devised and employed; conceptual distinctions are required; tests are constructed which depend for their validity on previously accepted measures and indices. Therefore it is only very indirectly that an attempt can be made to answer the original questions. They must be reformulated in terms of models for prediction and explanation.

The practical approach, however, is the use of tests to produce data that may aid in the construction of models that generate facts that can then be compared with new data for determining the utility of the model in predicting and explaining. Three different but related kinds of models are under construction nowadays that promise to be useful in studies of language development; these are competence models, performance models, and language acquisition models. The three types are highly interdependent but it is generally felt that the greatest progress has been made in the area of competence models; and this progress has occurred in the rapidly changing field of linguistics.

My own feeling is that the success of the linguists in constructing competence models has had a stimulating and beneficial effect on students of language acquistion, but that there is a danger in relying too heavily on linguistics to produce relevant models of language structure that can be broken down and applied isomorphically to language acquisition stages, not to mention to speech itself. Notwithstanding the recent trend in linguistics towards a growing concern with semantics, language use, the evolution of language, language acquisition, and even psychological reality, all of the current theories of language and the descriptive models on which they are based are judged in terms of simplicity, elegance, generative power, and ability to account for the structural diversity of idealized surface manifestations. They cannot be judged in terms of psychological reality and they are not evaluated on the basis of their ability to explain the nature of cognitive processes; that is not their intent or function. Yet it is just these things that determine the adequacy of a psychological model. The real confusion between linguistic and psychological models lies in the fact that most models of language, being the products of human minds as language itself is, do approximate an intuited notion of psychological reality by some of the units and relations postulated. Thus it is possible to reason that if some portions of a model are correct or appropriate, then the rest of the model may also be useful. Obviously this is not necessarily the case.

I believe that the top priority of the psycholinguist interested in language acquisition should be the construction of a performance model, one that is not necessarily just a competence model plus memory limitations etc. (This point is argued more fully in chapter four). Hence the stress in this paper is on cognitive processes that underlie language use and language learning. Rather than isolating analytical "stages" of language development indexed by structural features, the emphasis here is on presenting evidence that will aid in the delineation and explanation of the cognitive processes that work together in allowing children to learn languages, as well as those which are involved in the processing that must take place for the comprehension and production of actual speech. Such things as generalization, differential, addition, substitution, transformation, association, and feedback, though they may exist on different conceptual levels, are what is referred to as processes, and it is assumed that each has its own generating as well as limiting effects.

An attempt is made in chapters three and four to relate these processes individually to specific manifestations of language behavior for the purpose of illustration. Mistakes are what provide many of the clues as to their nature. This is only a first step towards an understanding of the interrelations of these processes in terms of onset stages and stages of relative importance during language acquisition and their correlations with biological maturation.

Perhaps in the future we will be able to isolate critical maturation levels; stages when the rapidity and content of language acquisition are critically influenced by biological limitations on cognitive growth. With luck it may be possible to examine biological limitations on adult human abilities to produce and understand utterances; to understand for example the relationship between memory-attention span and ability to deal with nestings, self-embeddings, and other recursive linguistic structures. The ultimate goal however, is to relate language and its use and acquisition processes to mechanical models of brain function that can in turn be related to chemical models of brain physiology.

0.2 Background of the project

This project grew out of my participation in the writing of a manual for the cross-cultural study of the acquisition of communicative competence (Slobin 1967). Gaps in present research on language development have led to increasing recognition of the need for; information about the learning of languages which are structurally different from English; a broadening in scope of language acquisition studies to include language use as well as the traditional phonology, grammar, and vocabulary; studies of the social milieu in which children are exposed to language as an aid to assessing its influence on language development. The manual represents an attempt to guide investigators in the collection of comparable cross-cultural data to these ends.

Field research utilizing this manual as a guideline has now been completed in Southern Mexico, American Samoa, East Africa, Southern India, and in a Black urban community as well as in a lower middle class White community in America. All participants in this joint effort attempted to carry out the primary tasks discussed in a core section of the manual. These included the following: selection of a sample of children according to specifications ranging in age from six months to thirteen years; elicitation and listing of initial vocabulary from two children; recording of free interaction between child and mother for intensive grammatical analysis; elicitation and recording of child imitations of systematically constructed model sentences; administration of standard speech comprehension tests, elicitation and recording of production of grammatical speech according to standardized tests; description of child's interaction networks and standard daily activities over the course of a year on the basis of observation and interview of child and parents; observation and recording of dialogs between children; interviewing of adults concerning beliefs about language acquisition and use; recording of ethnographic research on relevant cultural and social structural variables. Additional related interests were to be pursued where time allowed. My own interests lay in the area of lexical development and a procedure was initiated for investigating acquisition of the terminological system of a single semantic domain.

Three major aspects of the results of this field research project have been selected for exposition in this dissertation; milieu of language exposure during acquisition, lexical development, and grammatical development.

0.3. Plan of exposition

The dissertation consists of three chapters, apart from the introduction, and four appendices. Each chapter is a separate consideration of one aspect of language acquisition by Tenejapa Tzeltal children.

One of the long range goals in language acquisition studies is clarification of the roles that culture and society play in language development. A preliminary step in the investigation toward this end is the specification of the sources and contexts of a child's continuing exposure to language in a given society. It is only with such introductory knowledge that we can begin to adequately sample speech input longitudinally for comparison with speech output during the crucial early years of language acquisition. Chapter two places the specification of input sources and contexts in a matrix of the ethnographic description of the childhood portion of the life cycle in Tenejapa. Beliefs and practices that have a direct or indirect bearing on language acquisition are emphasized throughout the presentation. The data were acquired through questionnaires, informal elicitation sessions, and naturalistic observations. It is concluded in this chapter that the exigencies of and beliefs about life in the sparsely settled Tenejapa community in which mutual distrust, fear of many supernatural phenomena, and mother centered child rearing are norms, strongly influence contexts of speech input to the child and restrict early sources of directed input primarily to relatives.

Plants play an important part in the life of the Tenejapa Tzeltal, and children begin to learn botanical names at a very young age. Fieldwork in the paraje of mahosik' included taking children of various ages along a prearranged path and asking them to identify selected plants. Results of this procedure suggest a general ordering in the acquisition of plant names and point to some of the cultural and psychological factors that influence such acquisition. Chapter three deals with some facets of Tzeltal plant taxonomy and nomenclature, examining interconnections between the two systems, and classifies children's responses when identifying plants in an attempt to isolate trends of lexical development. One of the conclusions reached from examining the data is that the learning of plant names can be viewed as a series of successive differentiations both nomenclaturally and taxonomically, but that numerous other factors must be taken into account for a more adequate picture of the child's actual acquisition of botanical terminology.

A number of techniques have been developed for investigating aspects of the acquisition of grammar. One of these, elicited imitations from children of model sentences, promises to be very revealing of some of the developmental processes involved in language performance. A modification of this technique was used in the course of fieldwork in mahosik'. Chapter four deals with problems and results of analyzing data gathered thereby, suggests a priority in focus of performance over competence, and proposes the presence in young children of an aural analogue to the phenomenon of eidetic imagery which bolsters the hypothesis that there is a critical age for first language learning.

Appendix A presents the orthography of Tzeltal words used herein, based on the Tzeltal phonemic system, and briefly outlines some of the more interesting features of Tzeltal grammar.

Appendix B provides some notes on the field situation, including informants used, geographical settings, and a brief word portrait of the data gathering process.

Appendix C is a compilation of the plant identification data that was used in the analysis of chapter three.

Appendix D is a compilation of the elicited imitation data that was used in the analysis of chapter four, and a grammatical breakdown of the imitation models.

1. SOCIO-CULTURAL CONTEXT OF LANGUAGE ACQUISITION

1.1. Theoretical background

It is aximotic that language acquisition by children does not and cannot take place in a social or linguistic vacuum. Although there is considerable controversy surrounding the nature of the child's innate capacity for learning language (cf. McNiell 1966), and the significance of a "maturational component" in determining the rate and direction of language development (Lenneberg 1967), it is indisputable that the form and content of language input to the child critically restricts the form and content of the child's ultimate language competence. This is manifest in the fact that a child exposed only to English will not end up by speaking Russian or Japanese. Indeed, a normal child grows up speaking a language that closely approximates that of the other membersof his speech community. Yet the child cannot assimilate his total repertoire of linguistic units and the rules relating to them all at once. He must be exposed through a period of time to a sampling of units with relationships that embody rules. Such exposure occurs throughout a person's lifetime and presumably some learning goes on during most of that time. Language development takes place most rapidly during childhood, however, and in fact it is quite generally assumed that the bulk of grammatical-syntactic rules are learned in the short span between the ages of about two-and-a-half and five. Sociolinguistic competence is acquired more slowly.

During the acquisition of linguistic and sociolinguistic competence, the child is exposed to a multitude of speech forms, styles, codes, routines, etc., and from a number of different people; and it is the totality of speech input to the child, speech overheard as well as speech directed at the child, that shapes and limits his capacity for comprehension and appropriate production. This much is assumed: what remains to be discovered is the nature and extent of such shaping and limitation. Ideally one could collect and analyze all of the input to a child and compare this with his competence at different stages of development. A more practical alternative is to sample the child's speech input and his output for a comparison between the two.

To adequately sample speech input in its natural environment requires a knowledge of the sources and contexts of speech directed to and overheard by the child. These are socio-culturally determined. Hence there are practical reasons for investigating the socio-cultural milieu in which the child growsup before attempting to sample speech input, or for that matter the child's output. Societal behavior norms and ideals, belief systems, settlement patterns, economic considerations, and structural aspects of family and kinship all have their effects upon who speaks to what child and how often as well as how, when, where, on what topics, in what styles, and under what circumstances. If language acquisition is linked to social structure and cultural factors through speech input to the child, it follows that the study of language acquisition can only benefit from a delineation of cultural attitudes and practices that most directly influence the child's linguistic input. The question is how to do so without introducing a variety of extraneous ethnographic material that is not obviously relevant. A complete ethnography for example, would tend to submerge the pertinent facts in a mass of less relevant data, creating the difficult problem of separating the wheat from the chaff. On the other hand a few short statements about the child's interaction network would be misleading, incomplete, and oversimplified. A compromise approach to the presentation of facts bearing on the child's linguistic input is adopted here.

This approach is one of focussing on the childhood portion of the Tenejapa Tzeltal life cycle, emphasizing pregnancy, childbirth, and child rearing practices and beliefs. Linked to this theme, additional data on settlement patterns, religion, play habits, interaction networks, and political life are brought in to the extent that they seem relevant to the child's linguistic input and behavior and to the early portion of the life cycle. Wherever possible the relationships between social factors and language use are made explicit. Such obviously important things as baby talk, parental correction of the child's speech, speech play and verbal games among children, Tzeltal conceptions of child development (including linguistic skills), speech defects, verbal sanctions for bad behavior, linguistic taboos, child participation in adult speech events, and so on, are discussed if not always stressed in the presentation. Naturally this compromise approach must omit some pertinent facts and include some material that may not appear to be directly relevant. The tendency here is toward over-inclusion on the assumption that a few too many ethnographic details will not sacrifice clarity and may add to continuity of exposition. Moreover, such additions to the ethnographic record might prove to be of some value to the reader in getting a "feel" for the culture being described.

1.2. Pregnancy

1.2.1. Value of children

A child of either sex is a welcome addition to the Tenejapan household, for children mean extra hands to help with the housework, field labor, and other chores. Children are desirable in and of themselves also. It is a sad and cheerless house that has no children laughing, shouting, and playing in its vicinity.

Nevertheless, male children are far more highly valued than female children. Given a choice between having sons or daughters, most Tenejapans would pick sons because males inherit land holding, maintain stronger economic ties with their natal families throughout the life cycle, and provide a substitute for the father and grandfather in continuing the family line. It is not infrequent however, that a woman will hope for a daughter to talk to and to help with the drudgery of the household chores.

1.2.2. Abortion and barrenness

Because of the social and economic value of children, it is not surprising that abortion is virtually nonexistent and that there are a number of folk remedies for barrenness. It is generally expected that an adult couple living together will begin to produce children within two or three years. If they are still childless at the end of this time, the woman may resort to prayer and potions to increase her fertility.

One such potion consists of black gunpowder (*sibak*, which is used in the native shotguns) mixed in a gourd bowl partly filled with water. The woman who drinks this mixture should become pregnant within a few months if she repeats the dose two or three times on different days. However, if she drinks this medicine when she already has a child, then that child will die, although a child that may be in the womb already will be unaffected by the potion.

Other post-conquest materials that are used to promote conception are sulfur, camphor, and black pepper, each of which is employed in the same way as black powder. There are also a number of plants growing in the area whose properties of increasing fertility are known and employed on occasion. Some of these are *payte*?, *bakt[illegible]*?*poš*, and *sansiwre* *?ak*. It is generally the roots of these plants that possess the power to help a woman have children.

When it becomes apparent after three or four years of cohabitation, that a couple will not be able to produce children, the man will often seek another wife to augment his family. The barren wife may or may not be abandoned to go back to her family or to form a union with some other man.

A barren woman is believed to have a variety of horned caterpillar (*buluk' sit*) living in her vagina, which comes out in the middle of the night and suckles at her breast. The *buluk' sit* is about three inches long and thicker than a human thumb. It has a large mouth which it nurses. There is a story that in the days of yore (*nameh*) the *buluk' sit* could talk and would call out for its "papa", the barren woman's husband who was out working in his cornfield, begging him to come and give it its noon meal of *mac'* ("corn gruel", also a standard metaphor for "semen"). One time the people heard it crying and searched for it. They finally found it on the stem of a *č'omate?* ("chayote plant", also a standard metaphor for "female genitalia"). The women who has a *buluk' sit* is barren because the caterpillar is taking the place of a potential baby and thereby using up the limited capacity of the hapless woman for motherhood.

The woman is not always blamed when a couple doesn't produce children, however. If, through a previous union in which she produced, it is known that the woman is capable of having children, then it is her husband who is thought to be at fault. He is believed to have thin, watery seminal fluid (*k'anal ?išim*, literally "yellow corn", or *sikil nal*,literally "cold semen"). Such men are recognized when, on remarriage, they fail to produce children, or if their present wife has been proven fertile previously. Impotent men become the targets of gibes and jests that are generally made in their absense. One such man in Mahosik' is an alférez married to a young and attractive woman who badly wants children. Because certain death is believed to befall the unfaithful wife of an alférez, regidor, or presidente, this old man accepts the cargo or alférez every year in order to prevent his wife from getting the baby she wants from someone else. Another man with *sikil nal* living in Mahosik' was childless for many years. His wife recently bore a son, and it is whispered that his brother did him the favor of impregnating his wife so that he could have the child that he wanted so.

1.2.3. Conception

The male role is yet further elaborated upon in folk belief. The man is believed to possess an organ located somewhere in the torso that is called the *me?winik*. If only girls are born to a woman, then her husband has an *?ancil* *me?winik* (*?ancil* - "girl"). If only boys are born, or if both girls and boys are born to a woman, then the father must have a *kelem* *me?winik* (*kelem* - "boy"). Women have a *me?winik* also, but it is only of the *?ancil* type and so does not play an active role in deciding the sex of children.

Because of the value placed on children, a woman is very happy when she doesn't "see her blood" (*ma?ba* *yil* *spat* - *ma?ba* *yil* *č'ume?tik*) during that phase of the moon at which time she knows it is due. She proudly tells her husband that she "didn't see the moon" so that he can begin counting the months in order to anticipate the time of birth. During pregnancy the counting of months is done by noting the number of times that the moon is in a given stage in the sky. If, for example, the moon is a waning half moon when the woman misses her blood, then the months of pregnancy are counted by the number of waning half moons that have occurred since and including the first one.

1.2.4. Gestation

Many people believe that the child is due to be born after a pregnancy of ten to eleven months. A boy born after eleven months will be a strong and healthy child. A boy born after only ten months will be weak. A girl of ten months will be strong and a girl of nine months will be weak. These apparently long estimates of the gestation period are probably due to the moon phase during which blood is missed being counted as the first month, and to the lunar cycle which is shorter than a calendar month.

From the time of conception (*ya yič'* makel *?alal* to the moment of birth (*ya* *štohk* *?alal*) to the moment of birth (*ya* *štohk* *?alal*) the developing embryo and the foetus are called *hunbil* *?alal*, for during this time the baby is "accompanying" the mother, sharing the air she breathes and being nourished by the menstral blood that has ceased to flow. In its early stages the foetus has the form of a baby rat (*?unin* *č'o*), but once it begins to move around a little it starts to assume human form. The foetus is positioned head down in the womb throughout pregnancy. The stages of foetal development are included in Table 1.

The *č'ulel* (spirit) can enter the womb to join the child to be, shortly after conception or else it does so when the foetus takes on human form and begins to move (*ya* *šlihk* *nihkuk*). The fortunes of the human from conception to death are strongly dependent upon the fortunes, conditions, and desires of its *č'ulel*. If a č'ulel is restless enough it will sometimes escape one woman's womb and go to another, bringing the foetus with it. This is most likely within the first three months of pregnancy, and explains most miscarriages. The married woman of another household to whose womb the foetus has flown will then bear the child in eight months.

Because of the ever present possibility of losing the foetus, the expectant mother will pray and sometimes fast in an effort to prevent spirit flight or other misfortunes. She may pray every week or as infrequently as every other month, calling on me?tik kašeltik (the earth-mother), me?tiktatik, and a host of saint-deities associated with the native "church", and seeking their aid in assuring a safe, sure delivery of the child. Prayers are also said to ward off evil influences resulting from the envy of others and from accidental transgressions of prenatal taboos. In addition the expectant mother or a close female relative will pray that the child won't come out to be a stutterer, a thief, harelipped, a drunkard, or with some other negatively valued attribute. Prayers can be made on any day but Monday, which is a foreboding and potentially evil day. Nobody in Tenejapa prays on Monday for any reason.

Envy or the result of envy, witchcraft, is particularly feared by the pregnant woman. A woman who is poor or barren will feel jealous of another who is more fortunate and will speak and think enviously of the more fortunate one. She may say to herself or to another, "why does that person have so much; they don't deserve it; it would be good if something bad happened to show her; one of her children should die, or her unborn infant should be a girl; that would show her". This malicious talk is called hešhuntael. A more active form of envy, tawaltael that can result in evil prayers and witchcraft, can also cause much grief to the one who is fortunate. An envious woman can cause illness or death in someone else's child, cause a pregnant woman to lose her child, or

TABLE I

TZELTAL STAGES OF CHILD DEVELOPMENT

(INCLUDING LINGUISTIC SKILLS)

1. yič'oh makel ?alal - conception
2. hunbil ?alal - foetal stage
    - a. ya šlihk nihkuk - it begins to move
    - b. ya šlihk huk'ubahuk - it begins to make sounds, hiccoughs
    - c. ya šlihk šk'ušul - it begins to cause pains
    - d. ya štohk - it is born
3. ?alal - tutin - baby, infant
    - a. ya š?ok' ?alal - baby cries (?uneh, ?uneh - sound of baby crying) c.f. ?a, ?a - child crying; and ?i, ?i - adult crying
    - b. ya šlihk yil k'ahk' - it begins to notice the fire
    - c. ya šlihk ?ilawanuk - it starts looking around
    - d. ya šlihk šbalč'un sba - it starts twisting and turning itself
    - e. ya šlihk scelk'un sba - it starts turning over on its side
    - f. ya šlihk hihp'awetal - not glossed
    - g. ya šlihk ščošan sba - not glossed
    - h. ya šlihk kotlahetuk - it begins to crawl on all fours
    - i. ya šlihk hamuk sti? - it begins to open its mouth (cooing and babbling)
    - j. ya šlihk šmačan sba - it begins to pull itself to things
    - k. ya šlihk p'eč - it begins to stand up
    - l. ya šlihk spas čolčolte? - it begins to tentatively walk using objects as supports
    - m. ya šlihk benuk lek - it begins to walk well

TABLE I Continued..

n. *ya šlihk hamišlek sti?* - it begins to open mouth well (first a few clear words)

o. *ya* šlihk *k'opohok* - it begins to say words

p. *ya šlihk k'opohok ta sp'alap'al* - it begins to say phrases

q. *ya šlihk snop ?a?yeh* - it begins to learn to talk, chat

4. *č'in kerem, č'in ?ač'iš* - big boy, little girl
This stage begins when the child is talking well (*ya sna? ?a?yeh*), at about 2 1/2 to 3. Child can be called simply *kerem* or *?ač'iš*. Speaking well and able to run, but still too young to run errands.

5. *muk'ul kerem, muk'ul ?ač'iš* - big boy, big girl
This stage begins when child is old enough to run errands, at around 6 years of age. Child can still be called *kerem* or *?ač'iš* alone.

6. *tek'leh* - adolescent
This stage begins in early teens and lasts until married or of marriageable age. A girl can be called *č'iom ?ač'iš* at this time if not married.

7. *winik, ?anc* - man, woman
This stage generally begins for males at about 16 and females at about 14.

change the sex of a foetus that should have been a boy.

Witchcraft, the result of envy, can also cause a toad (*špek'ok*), burro (*buro*), or monkey (*maš*) to grow in a married woman's womb, that will be born dead within a term of three to eight months from the time when the woman doesn't see her blood. This never happens to virgins. The third child of my assistant's mother had been created by such witchcraft. It was a monkey with long arms and a long misshapen head that was born dead after an eight month pregnancy.

It is believed that witchcraft will be more effective against a pregnant woman if her husband doesn't accompany her at night when she has to go outside the house to urinate. If the husband is not at home then some other member of the household must accompany her, and unless there is a good strong moon they must light the way with a pitchpine or flashlight. If she were to go outside in the dark or alone she would run the risk of being "hit by *hme?tiktatik*" (*ya šmahot hme"tiktatik*) in which case she would lose her child.

There are a number of other prohibitions for the pregnant woman. Although she can weave, do housework, and indulge in sexual relations up to childbirth, she can't carry firewood distances such as to the weekly market (*č'iwič*), for this would increase her chances of running across evil influences. She cannot pass by a cross on the trail at noon or late in the afternoon. Even men are sometimes subject to sickness if they pass by a trail cross at noon. Violation of any of these restrictions can cause the pregnant woman to lose her baby (*ya šk'aš ?alal*). She must not deny her cravings for food either so she will eat what things that she craves and as much as she feels like.

She cannot look at a snake, for if she were to see the scales of any snake, then the birth of the baby would be delayed by a couple of months. The possibility of seeing a snake is one of the reasons that she should not walk around very much. She can not make fun of dwarfs, ugly persons, short persons, dark persons, lame persons, stutterers, people blind in one eye, mutes, harelipped persons, deaf persons, drunkards, thieves, old ladies that like to make love a lot, hunchbacks, the poor, pug nosed persons, etc., or her child will possess the traits that she made fun of while pregnant. She cannot poke fun at rabbits either, or her child will come out harelipped.

She cannot look at a dead sheep or goat, for this would cause her child to be born with bad eyes, looking like those of a sheep. The sheep, when dead, always has its eyes open. Neither can she look at the head of a dead bull or her child will be born with bad eyes. The presence of human corpses can also be harmful to a woman and her unborn child if she looks at the dead person, but in less specific ways.

If a pregnant woman feels a strong attachment to some little child, admiring the way it looks, then it is thought that her own child will come out looking like the one that was admired. It is also supposed that a woman who is pregnant during Christmas will bear a child of the same sex as the little Christ figure on display in the Tenejapa church at that time. Although there are both a boy Christ-child and a girl Christ-child, only one is selected for display on a given year.

A pregnant woman may dream one night of making love with a Ladino (*kašlan*) or some Indian other than her husband. If this happens she will lose her baby, for in reality the other man is either *?ancil maš* (female monkey) or *kelem maš* (male monkey), although they never appear in their true forms in dreams. If it is *?ancil maš* she will miscarry but will bear children again. If it is *kelem maš* then she will lose the baby and never bear children again unless she is fortunate enough to successfully employ prayers and one or more of the fertility potions that are used by any woman to promote conception. With repeated applications a woman who has seen *kelem maš* and lost her child will sometimes find that such medicine works.

Because of the possibility of creating envy in others, a woman who finds herself pregnant will generally be wary of advertising the good news outside of the extended family. This conflicts with a woman's natural desire to talk and to bask in her new happiness. If a woman were to go around telling people that she is pregnant as soon as she realizes her condition, as some women do, then it is thought that her foetus will begin to reach the stage of making noises (*ya šlihk huk'ubahuk*) earlier than otherwise. Some people feel that this will also cause her child to reach the babbling stage earlier as well.

A month before the anticipated birth a curer (*hpošil*) will be called to prepare the woman for her ordeal. Generally the *hpošil* will come to the woman's house, although sometimes she will go to him. The curer is usually a man although a few female curers live in Tenejapa municipio. Preparation for the birth event involves praying done by the curer and the drinking of a potion by the expectant mother. The curer mixes *kašlan tunim* in a gourd full of water, then blows and prays over the potion. This blowing is really a combination of blowing and spitting, and is called *tuhtael*. The woman then drinks from the gourd. An older female relative may, and often does, replace the curer for subsequent functions.

1.3. Childbirth

1.3.1. Labor

A month or so later, when it is obvious that labor has started, someone is sent to fetch the curer who comes and takes the woman's pulse, calculating by means of the sun's position just when the baby will be born and what sex it will be. At this time, to aid in labor, the *hpošil* puts the powdered roasted end of a possum tail in a gourdful of water or trago (pos̆), blows and prays over it, and then gives it to the woman to drink. Sometimes powder of freshly burnt *šulub čih* (sheep horns) will be substituted for the possom tail.

When birth is imminent the woman crouches or squats kneeling with the legs apart, and holds onto a house wall support. Her husband helps to hold her up by grasping her hips. Nobody presses her stomach. Because everyone in the house stays there during a birth, some women get embarrassed. If a woman is embarrassed by the presence of others she may go outside alone and have her baby in some bushes close to the house. If she is outside the woman will grab hold of a treetrunk for support. If she is indoors she will be squatting over an old chamarra or some dried banana leaves that have been put there to receive the baby softly. The woman's skirt remains touching the floor and is not raised at any time.

To make the birth easier the *hpošil* will often follow the drinking of possum tail that the woman does by putting his head near the seated behind of the woman and blowing (*ya yič' tuhtawaneh*). Later, if labor is difficult the expectant mother can eat a raw egg and/or shove the feathered end of a chicken feather into her mouth several times. Even more efficatious is the use of a young child of about six or seven to lean down and gently bump his head against the woman's behind while intoning *?awu ?awu*. This is supposed to frighten the baby out.

1.3.2. Post-natal

When the baby drops, the mother shifts to the side and some other woman picks up the child for the new mother is generally too weak. The mother then goes and sits on a chair near the fire and is handed the baby to hold in her arms. She spreads her legs facing the fire to hasten the expulsion of the afterbirth. When this occurs a thread is used to tie the cord close to the baby's stomach. Then the measure of the distance between an outstretched thumb and the middle finger (a *hoht*) is applied to the umbilical cord that has been tied. The cord is then cut at this distance, about six inches, from the thread. If the cord is cut short, then when the baby grows up it won't be able to shout very loud, an ability that is important for shouting communications across valleys, on the trail, and between houses. The afterbirth and what remains of the cord are put in the ashes next to the flames of the roaring fire and having dried a little are burnt. If it were not burnt up then the child would be subject to stomach aches throughout its life.

That part of the cord that remains with the baby drops off where it was tied in about a week. It is then tied with thread to the limb of a tree and left there so that the growing child will be able to climb high and well, without fear. This is always done with the cord of a boy and occasionally with that of a girl. If it is not done, then the child will not be able to climb trees, and will be afraid of heights.

If a baby is born with a mongoloid spot covering most of its behind and with a blue-green tint, that child is lucky. When it grows up and has its own cornfields, beans, and other food crops, they will yield much produce. The child's spirit has been given something (*yič'ohbeta* *šč'ulel* *bitik* *mayuk*); in short it will have a green thumb. If the mongoloid spot (*yašal* *yit*) is very small on the baby, then when grown he is destined for a poorer yield from his milpa.

If the baby is born with its umbilical cord hanging over its shoulders and chest in the manner of crossed cartridge belts, then it is said that the child will eventually become a killer (hmilawal).

If the foot of a baby being born comes out first, then the mother is sure to die in childbirth. If the baby has come out when the mother dies the two will be buried in the same grave. If the baby is still inside when the mother dies, she will be buried without taking the baby out.

After the cord is cut the newborn child is washed from head to toe with warm water and *č'opak* root soap and then dressed in a little shirt and a white belt (*sakil čuhkilal*). The mother has her own sash rewrapped very tightly around her abdomen to avoid getting a paunch.

Before the afterbirth (*sme?*) is burned, the *hpošil* looks at the little lumps in the umbilical cord, for each one signifies a future child to be born. A black lump is a boy; a white lump is a girl. When the lumps in the cord are very close together it means that children will be born one right after another; that is, with spacings of only a year.

Once the baby has been dressed, the little white core in the center of a chili pepper (*yat ?ič*) is rubbed softly on its lips. Alternatively the mother chews some chili herself and then puts a small piece of masticated chili in the baby's mouth. If this were not done, then the child would grow up having frequent stomach aches. The chili is supposed to withdraw from the baby's mouth such objects as would cause stomach pains (*ya šlok'tal sbolil ye swenta ma?ba štiwan šč'uht te ?alale*). These "objects" probably consist of mucous and air bubbles.

The baby is allowed to breast feed immediately. If the mother has difficulty giving milk, then her husband must go to the river and hunt for nep' (fresh-water crabs) so that she can eat crabmeat. This is supposed to stimulate milk production. On the day of birth the mother can eat only chicken. This too is supposed to encourage lactation.

Shortly after birth the whole family participates in finding a name for the baby. A number of factors enter into the choice of a name. There is a small repertoire of from five to ten possible given names for each sex that can go appropriately with a particular Indian surname. From this is selected a name that is appropriate to the sex of the baby. The choice is further limited by the exclusion of names belonging already to older siblings. If the baby is a boy, it is borne in mind that the paternal grandfather must have one male child named after him as his "replacement" (shelol). A girl baby is usually named after a paternal grandmother or aunt.

After the naming prayers are made, usually by the hpošil, in front of the family altar which consists of a pine cross, two or three fresh pine boughs stuck next to it, and pineneedles strewn in front. Candles and incense are burnt and the elder who prays asks that the child will remain healthy, keep it's č'ulel, and lead a prosperous life. Then a small piece of beeswax (čabek) is stuck on the middle of the top of the baby's head so that pukuh (evil spirit beings) won't molest the child. This beeswax remains on the head until it falls off naturally, which may be up to a year or so. An additional safeguard, practiced by some families, is to tie some blue thread (*yašal na*) around the baby's neck when it is a few weeks old. This helps it to avoid illness.

On the afternoon of birth a rooster is killed and eaten by the family, half of it being given to the hpošil. If the family is large a hen will also be eaten. If the family is poor and has no rooster, then just a hen is killed. It is most important for the new mother to eat chicken at this time. In addition to stimulating lactation the chicken protects her weakened body from the effects of "cold" (*sik*) which could otherwise enter her womb and prevent her from bearing subsequent children.

The *hpošil* stays with the woman as long as necessary, sometimes three days, receiving no payment except a half of the chicken that is killed and the meals that he eats. His meals always include eggs and he is able to take his half of the chicken home with him.

1.3.3. Parental restrictions

For the first two weeks after the birth mother and child are supposed to remain indoors and not be exposed to non-relatives. Most of this time the baby is swaddled from head to toe with a clean cloth. It is only after two weeks that limited sexual relations can be resumed. After twenty days restrictions on intercourse are dropped.

For twenty days after giving birth the new mother cannot bathe or she would fall ill and become swollen all over her body. She cannot work during this time, and if she goes out of the house at all she should not walk far or long. For the first twenty days, when she goes outside to urinate or for any other reason, she must wear her black blanket shawl to prevent the illness that would enter her body and swell it up otherwise.

There are also a number of restrictions on the kinds of food that the new mother can eat during the first twenty days. Each day she drinks warm *mac'* (corn gruel) with chili. This is an additional aid to her production of milk for the baby. She can also eat beans, tortillas, and chicken. If she wants bananas she must roast them by the fire first. Water must also be heated by the fire before she can drink it. She cannot eat beef, eggs or toasted tortillas; nor can she eat green vegetables, fruits (except roasted bananas), or any other "cold" foods.

If a mother carries her baby with her outside of the house within a couple of months of its birth, she must close off the entrance to any intersecting path by placing an available branch or two across the mouth of the path that she is walking on. This is done so that the baby's *č'ulel* won't escape, get lost, and maybe wander down the wrong trail. With its spirit lost the baby would get sick.

When the woman wants to cross a river or stream with her infant she must first pick up three pebbles from the bank and either throw them or carry them across to the other side. This enables the *č'ulel* of the infant to cross over with it. If this is not done the baby will cry and cry and become ill.

If an infant does become ill from a mother's failure to close off a path or to cross a stream with the aid of pebbles, there is a remedy. The baby is mounted on the back of a black dog and held there while the mother pronounces the following verbal formula: *ba ?ilatal te ?alale*, *banti č'ayem hilele*, *ma me nahtiluk te š?ok'*, *ba ?ilatal te banti č'ay hilele* (go look for the baby, where it got left, that it won't cry long, go look where it was left).

An infant can be washed on any day of the week, but it cannot be washed in a river or stream, or with cold water. Water for washing the baby is heated in a pot by the fire until mildly warm. The mother then washes the baby from stem to stern with her hand rather than with a rag. In place of soap she uses *č'opak* root for the first year or so. Even the clothing of the infant cannot be washed in the river, although soap may be used for it, because the river would carry away the dirt and defecation from the clothes, bringing it far from the home of the child. If this were to happen the baby's *č'ulel* would be disaffected bringing illness upon the baby. This conceptual extension of the human body to include some of its biproducts seems to have an analogy in the Pedrano (Tzotzil) custom of saving nail parings and some hair (cf. Guiteras-Holmes 1961: 113).

1.4. *Child rearing*

1.4.1. Infancy

The new mother is near her infant at all times. Most of the day the infant is sleeping in her lap, held in her arms, or in a sling on her back. The long cotton sling is hung over the mother's left shoulder and under her left arm. It is knotted in front and can be pulled around to the side so that the baby can nurse through the side slits of the mother's huipil. While asleep the infant is sometimes placed on the bed for short intervals so that the mother can go outside to urinate or perform some chore indoors. She keeps a constant watchful eye on it, however, At night it sleeps on one side of its mother while her husband sleeps on the other.

After a baby is a month old or more, it can be held by an older sibling for a short time while the mother is busy. After six months the baby can even be carried in a sling on short errands by an older sister who might be no more than seven or eight herself. By this time, of course, the sister will have learned most of the techniques used by the mother to soothe an infant.

There is a rocking motion (*ya ščipun* - *ya šč'awutes*) that is typically used by a woman standing with her baby in the sling on her back. With one foot behind the other, body weight is shifted to each leg in turn with a light rhythmic bouncing motion. Other means of soothing the child or getting it to sleep include gently patting its behind or stroking its temples while softly intoning *šššš*. Although handling the baby's genitals is a common technique for soothing in cahal č'en, it is less frequently done in mahosik'.

The infant is breast fed whenever it is hungry and no attempt is made to establish a schedule. Breast feeding is continued until the child reaches three or older unless lactation stops earlier or the woman becomes pregnant again. Generally a child is allowed to nurse for the first three months of a mother's new pregnancy, after which time her milk is spoiled. Some children will have occasional access to the breast as late as the fourth or fifth year. Sometime during the second half of the baby's first year it will be given small amounts of mac' and later, when the milk teeth have begun to erupt, it is allowed to chew and suck on tortillas and pieces of mango, orange, and banana. Soon after this the child can eat the full adult complement in addition to its nursing.

Verbal responses to the baby's movements, gestures, and sounds are offered long before a child is able to put his desires into words. The mother will pick up food or other items nearby and offer them to the child while saying such things as "do you want this orange?, do you want this tortilla?, what about a banana?" etc. Such responses to almost any sound that the baby might make are thought to be necessary, for the child's č'ulel might otherwise decide to leave its "host" to eat something, causing the child to sicken and perhaps die. When a baby is ill and a curer has come to take its pulse, one of the common questions that he asks of the mother is whether she has recently been to the market where the child's spirit may have eaten something. Diagnosing this as the cause of illness will help him select appropriate prayers.

From the beginning a baby girl will have a native made huipil or Ladino made cotton shirt, a blue skirt like those of women, and a wide white belt which is softer than the red one which is added to her wardrobe after several months. The huipil, skirt, and two belts, the white worn over the red, are standard equipment throughout life. The baby boy will have a long cotton shirt that may or not be belted with a miniature of the long belt-sash worn by men. Once walking, a boy will often run around naked or with just a Ladino made T-shirt until three or even four years of age, although those families that can afford it will buy chamarras for their male children when they reach the age of two and a half or three. Some little boys, before they get their first chamarra, wear a short white cotton dress sewn to the hem of a T-shirt or sweater and usually not belted. This dress has the same name as the skirt worn by women (cekil - cekel).

Before a child of either sex has learned to walk well enough to go outside of the house to urinate or defecate, it will wear diapers of a sort. These diapers consist of a large folded cloth wrapped around like the skirt with a smaller cloth draped over the crotch inside the other. When it is time to change diapers, excrement is wiped off the baby with the hand which is then wiped on a clean portion of the dirty diaper cloth. The diaper is rinsed in hot water and then hung up to dry. A replacement diaper is always warmed for a few minutes in front of the fire before use.

By the age of two most children are expected to be able to control the urge when nature calls, but some children urinate occasionally at an inappropriate time or place without being scolded. Before the second year is ended most children no longer wear diapers so a reprimand usually follows when a child wets his own clothes. Little boys often have no problem with this for they don't like to be hampered by pants or calzónes, wearing only a shirt and/or short chamarra until about seven or eight when they get their first pair of calzônes, the short pants called *wešal*.

When an older child wets the bed, he or she is scolded and told: "Why do you urinate, are you still a baby? You shouldn't urinate thus." (*bi* *yu?un* *ya* *ščušnat*, *ya* *bal* *?alalat* *to*. *ma* *štun* *ya* ščušnat). More rarely the child may also be punished corporally by having a cheek slapped, his behind hit with hand or leather thong, or even the top of his head hit with a stick. If the offender is a boy, there is a remedy for bedwetting. The resinous juice issuing from the burning end of a piece of firewood of a certain kind (*sakil* *šašib* or more rarely *hihte?*) is collected on the mother's finger and applied to the boy's penis (*ste?el* *yat*) three times in succession. This juice (*sbul* *ya?lel* *šašib*) is never used on girls (cf. Redfield and Villa Rojas 1962: 190).

Bodily functions are not in themselves a source of shame. They are discussed freely and openly without any age or sex restrictions. Little girls learn by instruction and imitation to squat by the side of a trail or in the bush without lifting the skirt or getting it dirty. A certain amount of privacy is desirable after the age of three or four, and more so after puberty, but being seen accidentally is not a cause for embarrassment. By the time a boy gets his first calzónes he knows without being taught how to face away from anyone present and lift his right pantleg without getting it wet. When a young child turns round and round (*suhtubahel*) as if trying to get dizzy, it is thought that the child is getting ready to urinate, so the mother will sometimes tell it to go outside and do so.

1.4.2. Growth and skill formulas

Nail parings and hair of children are saved until they are about two or two and a half so they can grow strong and healthy. If these items were thrown away earlier than this a child's *č'ulel* would molest him and illness would follow. There is no *č'ulel* in the hair and parings themselves, however, I am told.

When the child first grows a head of hair at about six months to a year old, it is all cut off with a pair of sissors. This is done in the morning, usually by an older woman who knows how. That afternoon the *norep* ritual is performed. The woman takes up a piece of charcoal and draws a line from the middle of the child's nose, up over the top of the head, and then circles around the head above the ears while saying, *norep*, *ma me šč'ayat ta wic ta č'en*; *norep norep*, *ma me šč'ayat ta wic ta č'en*; *norep norep*..., a formula that should help the child to keep from being molested by evil beings. As the hair grows back this *norep* ritual is performed once or twice more, until the child is about two.

Parents are concerned about the growth of their children as well as their development of certain skills. There are a number of techniques available for stimulating such growth and development. When a child is between the ages of eight months and about three years, the mother will push a peeled ear of fresh corn up in front of her child's face while pronouncing the word *č'ia* ("grow!") three times. The child then eats the corn and is supposed to grow fast and well. This formula is employed a couple of times a year.

When a child reaches about five years of age the *c'uyel* (hanging) technique is used so that he or she will become tall and active. Early in the morning, between six and seven A.M., the child is put up to hang by its hands for a couple of minutes from the branch of a tall tree. Once the child knows how this is done, the mother can simply tell it to "go hang", which she does every so often until the child is about nine. It is thought that if such hanging is not done, the child will become lazy (*harakan*) and short (*komol*).

When eggs are available, children of up to seven or eight years eat them daily as an aid to good health and rapid growth. For adults eggs are a luxury indulged in only occasionally or when an important guest is visiting. Eggs also play a part in the child's learning to walk. When the baby has reached the stage of standing up shakily and using objects to hold on to in getting about (čolčolte?), he is ready to begin treatments of špošil ?akanil ("leg medicine"). When an egg is cracked open to be eaten, the mother will take a little of the juice sticking to the inside of the shell and apply a little with her finger to the knee joints and ankles of the baby. It can also be put on the achilles tendon and on the top of the foot. This is supposed to speed the child's learning to walk. If the child is already walking it will help him to run fast. This use of egg white is also a remedy for the child who falls down often while walking, and as such its daily to weekly application may continue until the child reaches three or four and no longer falls often.

Although children can be carried in a sling on the back by siblings and parents as late as five years of age, such carrying slackens up appreciably by the time a child is two and a half in most cases. Since almost all traveling is done on foot in Tenejapa, walking is an important skill both for boys and girls to acquire. When the child is first learning to walk, the mother will take its hands in hers and help it to walk slowly around the outside of the house early in the morning. If this were to be done in the afternoon, it would retard the child's learning to walk. If the child gets tired after only once around the house they will rest a few minutes and then continue until the circuit has been made three times. At first the mother walks backwards, pulling the baby along. As the child progresses and is able to walk hesitantly alone, a little stick is given it for support.

Once a child has learned to walk and having insisted upon accompanying its mother on some short walk, it decides halfway to the destination that it wants to be carried, the mother will often break off a short branch of *bac'il* *c'eman* or some other plant, and switch the child's ankles (*ya* *yak'be* *wahč* - *ya* *shisbe* *c'eman* *ta* *yakan*) so the child won't get tired and cry.

Speaking well, with wit and wisdom, is admired in Tenejapa, and parents value such abilities in their own children as well as those of others. Nevertheless there is apparently no emphasis on techniques for helping a child learn to speak, as well as those of others. Nevertheless there is apparently no emphasis on techniques for helping a child learn to speak, although speech skills are related to various aspects of the child's experience (e.g. curing, prohibited behavior affecting speech, play and games, etc.) in beliefs, sayings, and legends.

Before a child is able to speak well, it is believed to be helpful to this end if its head is gently bumped every once in a while with a *culha*, a large, short gourd of the type used for storing warm tortillas. There is no conscious training in language skills received by the child until he goes to school at the age of six or later. At that time the language he is taught is Spanish. On the other hand parents and siblings do occasionally correct phonological and grammatical mistakes made by the very young child between about two and a half and four years of age. When mistakes are not corrected, they are either ignored or mimicked.

A child of three or four with pronunciation difficulties, delays in learning to speak, or problems in the area of speaking well and correctly, may be given one or more roasted cicadas (čikitin) to eat. Another remedy for such speech difficulties is a small bell, the kaškawela worn by alférezes, which is lightly touched on the crown of the child's head three times and then on top of the chest three times. These remedies are not applied in cases of paʔtiʔ or ʔumaʔ (cf. Table 2), for those speech defects will accompany a person throughout life and have no remedies.

1.4.3. Dreams

A child's health can be affected by the dreams of its parents although the direction of causality is not well understood. Clearly the volitional element on the part of the dreamer is minimized, while the simple prognosticative value of a dream is stressed, provided that the symbols contained in it can be correctly interpreted. Some symbolic interpretations are widely known, but for many dreams an elder must be consulted in order to discover the significance of certain omens and portents. A girl's č'ulel can be symbolized in dreams by female clothing, a basket (moč), or a gourd bowl (bohč). The č'ulel of a boy can be represented as money (tak'in) or articles of male clothing in dreams.

A child will die if one of its parents dreams that the child's clothes are carried off by an animal or carried downstream by a river. If an animal eats the child's clothes in the dream, then that child will become ill. If a parent dreams of seeing a basket or gourd bowl floating down a river, one of their girl children is fated to die. On the other hand a boy child will die if one of the parents dreams of persons coming to the house to collect money and receiving it. If either parent dreams of a Ladino (hkašlan) carrying off a boy's shirt or a girl's huipil, then that child will die.

If a dream occurs early in the night, sometime before midnight, then it may be up to six months or more before the event portended by the dream will take place. If the dream occurs later in the night, perhaps three to five A.M., then it is believed the event foreseen will happen very soon. Sleeping with the head pointing in the direction of the setting sun is thought to cause bad dreams, whereas pleasant dreams can occur if a person sleeps with his head toward the rising sun.

When a parent has a dream that forebodes ill for one of the children, the mother will pray at dawn in order to ward off the danger by "covering up the dream" (makel wayič). Often death or illness will overtake the child anyway.

Children are not supposed to dream until they are about six years of age. One eight year old orphan girl living with my assistant dreamed one night of seeing herself lying on her back with some pitchpine slivers burning near her head. This is a common symbol of one's own impending death. The girl told her foster mother about the dream the next morning so that she could pray. Everyone in the family was worried. Six months later the child died.

1.4.4. Parent prohibitions

Parents must be careful not to do things that will adversely affect their children. When a mother is selecting a switch for applying to a child's ankles on the trail, she must not pick out a branch from the *takin* *č'iel* bush, for if a child is hit with a switch from this plant he will stop eating, get very thin, and eventually sicken and die. When a bench in a house is not in use it should be upended and leaned against a post or wall, especially at night. Besides inviting a visit from the devil (*pukuh*), if this custom is not heeded, a young child in the household can be retarded in learning to walk. The herb *sot* *čan* *wamal* has seed pods that rattle. It is said that if one plays with the plant, shaking the seed pods, then one's children will begin to cry a lot. Even some children of five and six are able to identify the belief with the plant, indicating early learning of such beliefs.

Such long range effects as balding patterns can also be caused in children by a parent's lack of caution. During the cleaning of the milpa, a person must be sure to leave each of the three rows that he works on at a time equally cleared of weeds when he quits work for the day. If not his children will grow up with a receding hairline on the sides (*shak'am*), an undesirable trait. A high forehead due to balding in the front (*t'aš* *ti?ba*) is also undesirable although it is well known among Mayans of both sexes. If the three stones that line the household fire are left in too loose a circle, then children of that household will get foreheads that are big, high, and ugly, for the hair will not grow down on them. This same frontal baldness would afflict one's children if, having made a clearing in the ashes to roast chilis, one leaves the cleared space intact after the chili peppers have been roasted and withdrawn.

Birth defects as well as the number of potential children a person might have can also be influenced by seemingly unrelated behavior. When the moon is full or gives enough light to see well by, a person should not carry lit pitchpine outside at night or their children may well be born blind or with some other defect of a similar nature. When there is no moon and pitchpine sticks are needed to light the way, one should carry at least three or four slivers of it to insure against having only one child.

1.4.5. Child prohibitions and remedies

A person's health and very life are strongly dependent upon his *č'ulel* (spirit) and the fortunes of his *labil* (animal soul). Although there is little one can do about the *labil*, a great deal can be done to protect the *č'ulel* from harm, if not always successfully. Such things as falls, blows, deep sadness, crying, fright, and exposure to water, cold (*sik*), aire (*?ik'*), or the envy of others are all to be avoided for they can lead to illness (čamel) and death of the individual (linguistically illness and death have the same root form, čam, and illness is conceptualized as a state of dying, the logical conclusion of which is death itself). They are dangerous to the individual because of their

TABLE II

SPEECH PATHOLOGIES

There are only two named speech defects present in children and adults, that are really considered speech pathologies, and as such, problems. On the one hand there is the condition ?uma? "mute". On the other hand pa?ti? means "stuttering" or "stammering". A person can become pa?ti? if he is hit on the back (usually by someone like an older brother or mother) when young (about 2 - 3 years old).

In addition to these two things there are a number of words for conditions or manners of speaking that we could consider related to or part of the subject matter of speech pathologies. For example kohk means from "hard of hearing" to "deaf".

Sometimes a person can't talk clearly because they have what is called k'ol ?ak' ("rounded tongue" "folded tongue"), which in many cases is caused by problems of mouth formation coincident with harelip and/or cleft palate (harelip is called šelti? "split lip"). Whatever the cause this is considered to be the fault of the parents because it is well known that very soon after birth you can sew up a harelip with a needle and thread (usually done by the mother or grandmother).

There are also a number of terms that describe voice quality and manners of speaking that produce certain voice qualities. The voice qualities produced are all more or less disvalued, and some are actually made fun of as well as the persons that talk with such qualities:

ma?ni? and suk ni? are synonyms describing the sound of a highly nasal voice such as can be produced by holding the nose closed with the fingers.

ma?o?tan is the term for a deep and rumbling voice.

rónko nuk' and čehk'el nuk are synonyms for a scratchy voice with voice cracking such as one finds as the voice is in the process of changing during puberty. The term can be used for anyone with a scratchy or cracking voice regardless of age.

sc̣'ulet is applied to a very high voice or a falsetto voice. Can be used to describe both men and women.

pok ?e describes the sound of talking by persons who are old and have no teeth, or any speech that sounds this way.

tub ti? and tub ?e are synonyms describing a mouth that is all squinched up and pursed, whether it be while talking, smoking, or just natural.

c'oy ?e describes someone whose mouth is on one side of his face as he talks out of the side of his mouth.

TABLE II ... Continued

leb ?e describes someone the edges of whose mouth are drawn way back or someone with a very big mouth, while talking.

lut ?ak' refers to someone who talks with just the tip of the tongue being constantly between the teeth.

sel ?ak' refers to someone who talks with the tongue sticking way out.

šew ?e describes a person who has one side of his mouth hanging down while talking.

noy ?e refers to the bottom lip (and jaw) shifting from side to side while talking. A trait found particularly in older people.

kac' *?ak'* refers to the tongue hanging out of the side of a mouth that is already poked over to the side of the face, while talking.

sah *nuk'* refers to a weak and slightly scratchy voice such as that of a very old person.

šna?et is a term meaning talking very slowly. Naturally people like this are made fun of, just as sometimes are people talking very fast, *?animal ti?* or *?animal k'op*, or people talking very softly and gently, *lom k'un*.

There are also terms of approval regarding voice and speaking ability:

šk'anet means talking with a nice strong voice that would be a good singing voice.

hamal shuk' describes a person as speaking or talking well.

nakal yo?tan and *hamal sti?* are synonyms meaning talks a lot, this being approved of under most circumstances.

effects on the *č'ulel*, which can even be lost as a result of these and other occurrences, particularly in children.

The younger the child the more capricious, easily harmed, easily lost, and weak (*k'un*) is its *č'ulel*. A young child must not fall down or it may lose its *č'ulel* to the earth. Thus when a child learning to walk starts to get up in an effort to take the first few steps, his relatives rush to him and hold or pick him up so that he may not fall. Once walking, a young child is often allowed to accompany his mother in getting water or on some other short errand. If he trips and falls on the way the mother will become anxious and often pray with great urgency that the earth will not take and keep the child's spirit. Of course this often scares the child, sometimes to the point of vomiting, which confirms the mother's anxiety.

It is always potentially dangerous to fall, no matter how old one is. When a child of three or younger slips and falls, the mother will often pray at the time and on the spot where the fall took place. She will bring two or three pine boughs and stick them in the ground to the side of the trail where the child fell. Then, having gone to get a chicken to sacrifice, she will pray. During the prayers she wrings the chicken's neck and begs the earth to let the child's *č'ulel* go in exchange for the chicken which is a rooster if the child is male or a hen if the child is female. Then she sticks two groups of chicken feathers, three per group, in the ground in front of the pine boughs. Thirteen candles are lit in front of the feathers, and thirteen pinches of incense (*pom*) are burned before the candles.

If the fall was not so serious or if the child is older, the mother may wait until she gets home to pray. Or she may wait until the child falls ill, at which time she prays at home, where the child fell, or up on one of the nearby peaks. Sometimes a *hpošil* will be called to assist in the praying.

A little bit of native tobacco (*bankilal* - *may*) wrapped in a cornhusk packet can be worn by children to protect them in times of danger, such as during the course of a sickness or in the presence of the dead. When attending a wake adults as well as children wear these packets, under the belt or at the back of the neck, and frequently some of the ashes of burnt tobacco are applied to the knees and ankles with a wetted finger as additional protection.

Excessive crying and sadness can be harmful to a child through his *č'ulel*. This is one of the reasons that parents often accede to the wishes of a child who wants something badly enough to be very persistent. Putting the child to sleep will also stop excessive crying and the mother will do much to soothe it to this end. The *wayway čan* is a large black and white spotted beetle that sleeps very soundly in the sun. When a child cries a lot this beetle can be placed in the child's sash and left there. The child will then fall asleep and stop crying due to the beetle's presence it is believed. It will usually crawl out from the child's sash within half an hour or so, but by then it should have done its work. The child that cries and cries because its mother is pregnant again can be rubbed with the leaf of the *či?ilte?* plant over the top of its buttocks on three successive mornings. This should cure the crying condition when it has been caused by jealousy of a new arrival in the family.

A sudden fright to a young child can cause its *č'ulel* to be lost, so care it taken to avoid situations that could frighten a child, when this is possible. If a child becomes frightened for some reason or another, the leaves of the *pošil ši?wel* plant can be employed as a remedy. The leaves are stripped into water in a gourd bowl after which the child is washed on the arms, back, and stomach with the water from the bowl.

The *č'ulel* can also be taken from a young child when a copy is made of its image or voice, for the copy contains a part of the child itself. If the copy is taken for a great distance from the child, the incomplete part of the *č'ulel* which has been left behind will cry for its remainder. For this reason I was often not allowed to photograph or tape record a young child because the mother thought that I would take the photograph or tape to the U.S. with me which would cause ill to her baby.

Before the age of six a child learns to respect older persons; to let them pass on the trail, to let them enter the house first, to obey their wishes, not to bother them when they are eating, and so on. The *č'ulel* of the very old is *lom toyem* (very exhalted, high, heated up) as well as *lom tulan* (very strong), whereas the *č'ulel* of a child is *lom k'un* (very weak, malleable, soft). If a child were to disrespect an old person, for example by running fast pass him if he is sitting by the fire eating, it is then possible that the elder or his č'ulel might get angry and molest the č'ulel of the child. My assistant's uncle, a nice old gentleman of around sixty who is thought to be almost ninety, is always fed and treated well when he visits his relatives, for it is thought that if he became offended his strong and mature "spirit" could cause harm to befall a child in the family. Even a close and well liked relative can be dangerous.

In fact a dying relative can be more dangerous to a child than a non-relative. My assistant's father had been slowly dying for almost a year, apparently from something like a cancer that had swelled up his legs to balloon size. He began to get worse shortly after my arrival and then his eight year old grandchild suddently died with no warning. The next few days the old man's health started improving slightly. The explanation was that his č'ulel, in a desperate fight for survival, took the essence from a nearby child relative whose "spirit" was weak with youth, in order to gain a few precious days or weeks of life. Such "spirit" stealing is most likely to occur within households rather than between them.

Because the elderly are so powerful of spirit, a child is taught to always greet an older person when they pass by on the trail or near the house, and if the greeting is not heard, then the child is supposed to repeat it more loudly so as to remain safe from the potential harm that could come from the elder's *č'ulel*.

When a child gets old enough to run around outside the house a little bit, he begins to learn that some plants can be harmful to him. He learns to identify the plants by sight and at the same time is exposed to their names. It is believed that children who play with the *yašal nič čin ?ak'*, a vine, will get many festering pimples in their ears, or the ears may simply rot themselves. Children are not supposed to play with the *petu maš*, a wild bean, either, for this could cause dollar size black circles on either side of the buttocks. The child is told also that if he plays with equisetum (*tuht*), his pubic hair will grow very long like the hairs of the plant. When parents see children playing with the plant they will scold them and, holding out some of the *tuht*, will ask if they want their pubic hair to grow long like that, thus instilling a negative evaluation of such side effects. Worse than playing with *tuht* would be for a child to play with acorns (*sit hihte?*) or avocado pits (*bak' ?on*), for this could cause tumors (*čakal*) to erupt on the body. Neither can a child chew on any kind of pine wood, especially pitchpine (*cahal tah*), as this would cause him to lose his teeth early.

When the child is younger, up to a year or so, it is more likely to suck its thumb than chew pitchpine. When the mother notices this she takes the thumb or fist out of its mouth, for if she didn't hair would fall out. When the child is a little older the mother is past this danger, but she still doesn't allow her child to suck fingers, thumb, or fist, as this is thought to widen the child's mouth or push it out as with a perpetual pout (*tubti?*).

Children find out too, that they are not allowed to eat foods that have been nibbled at by a rat or mouse, or fruit that has been pecked at by birds. Even a young adult steers clear of such foods for rat eaten food is dirty and can cause illness while bird pecked fruit, if eaten, would lead to neighbors' accusations of ill deeds such as murder, robbery, fornication, etc. Only the very old can eat these contaminated foods, and then only after removing the nibbled portion and pronouncing a verbal formula to counteract ill effects.

Children as young as two and a half are warned that they can't eat sweets if they have a cough, that they should not eat food or drink *mac'* while standing up, and that it is bad to eat with the head thrown back (*hawal*). Some are even told at this age that eating standing up could cause the wind to come and ruin one's half-grown cornfield, and that the face turned up while eating causes many pimples (*wahbah*) to grow on one's face.

Children seen putting their feet on a fireplace stone (*yok'et*) are scolded and told that this could cause them to become lazy and stupid. The child learns quite early that many kinds of behavior in the house are prohibited and are associated with beliefs that harm could come to the careless individual. Other antics such as restlessness, getting dirty, playing too much with household utensils, etc., lead to a scolding, but are not supported by stories of potential danger to the child.

Once the child is old enough to play outside, it is warned not to enter caves or sinkholes, for the _č'ulel_ could well be lost in such places as they are part of _htatik_ _?anhel's_ abode. It also learns that one shouldn't throw stones at a hummingbird that is sipping nectar from a flower as this would cause the metal tools of the household to lose their edge and temper, breaking readily.

Children caught shouting, yelling, and making a lot of noise while playing will be scolded and told the story of the children and the petate. Long ago there was a group of children making a lot of noise in their unrestrained playing. The devil (_pukuh_), looking like a man, came up to them, having been attracted by the noise, and asked them what they were doing. The children, fearful, ran away and hid in a reed mat which they rolled up around them. They suffocated and died in the rolled up petate, and all because they had been playing too boisterously, creating too much noise.

Making noise at night is even more dangerous to the child for at this time the _pukuh_ is easier to attract, and he will cause illness or death in the child. Nighttime is a time of particular caution in Tenejapa. Various types of evil lurk on the trail and just outside the house. Children of up to eight or nine should never leave the house at night unaccompanied by an adult, for this would be courting illness or death. Even at dusk a child should not look up at the trail if he hears a noise there. It could be the _pukuh_ making the sounds, and the child, seeing him, would die. Children learn too, that neither garbage nor water can be thrown out of the house at night for _hme?tiktatik_ could be waiting in the patio. Even if this is not the case, the one who throws garbage out at night will compulsively flee the house never to return. Even children's names should not be pronounced at night for the _pukuh_ would hear and molest the named child. Thus, at night particularly, a child is addressed as _tatil_ (little boy) or _kancil_ (little girl) by others in the household.

The normal sleeping position in Tenejapa is on the side. This applies to adults and children both. If an adult's stomach hurts then he may decide to sleep on his stomach. However children cannot do this. It is thought that they might suffocate. Nobody sleeps on his back, for if this were done, the _pukuh_ would come and straddle the chest, sitting on one's heart and causing illness.

A child may, while playing, attempt to put on the clothes of an older sibling. The ever watchful mother will put a stop to this immediately. It is thought that if a younger sibling wears the clothes of an older sibling, the older one will then stop growing until the younger has caught up to him or her in height.

It is natural for children to mock other children as well as adults. They are warned, when caught making fun of someone who is lame, hunchbacked, harelipped, or otherwise afflicted, that such mocking is bad and dangerous to the mocker. A child mocking an afflicted person is likely to develop the affliction that is being made fun of.

1.4.6. Discipline

Parents do not rely upon the child's own desire to remain healthy and safe from harm as an incentive for good behavior. A child is often too young to understand the consequences of its actions before the age of six or seven so the parent resorts to threats of more immediate retribution, promises of rewards, and sometimes corporal punishment.

By our own standards the Tenejapa parent appears to be very patient and lenient with misbehaving children, especially when the child's health or life are not threatened by such behavior. The mother, cast in the role of protector, depends primarily on coaxing and minor threats to keep her child in line. The father, more rarely home, is more demanding of obedience, more ready to physically punish a child it is believed, and the threat of his ire or drunkenness is often enough to keep most children from getting out of hand too often. The mother's mother and less often the father's mother are known to be very ready with a slap and a scolding to enforce obedience.

Some of the things for which a child may be punished or reprimanded are lying, laziness, excessive crying, fighting, getting angry, not obeying, cursing, persistent demands for favors, excessive sexual playing, disrespect to elders, and excessive dalliance in running an errand.

A child younger than three or four is not expected to obey orders without some coaxing. If it touches things that it shouldn't the mother will warn that a snake will come out from that area and bite. Failure to obey an order to stop whining, stop fooling with the fire, stop getting dirty, to come and sit down, or to be still will often evoke a threat from the mother. She will say that a drunk relative is coming to grab the child or that a Ladino will come to snatch it away; that a bull is coming to gore it, or that the pig is coming to bite. The mother may withhold some luxury from the child also, saying for example, that she is going out to visit or cut cane without bringing the child along; or she may threaten not to wash the child's hair. The mother can also threaten not to answer when the child talks, and this usually results in a game for the child of trying to get mother to answer, which of course redirects its attention away from what it had been doing; and this is just what the mother wants. The mother may also plead that she or the child will get a scolding from the father or a grandparent of the child.

If repetition of such threats and pleas is unsuccessful the mother may yank the child to her or playfully slap it in the face or on the buttocks, laughing and rapidly softening if the child starts to cry.

When the child is a little older threats of the pig, bull, or Ladino are abandoned, and corporal punishment for disobedience is more severe. The child may be hit with a stick, the hand, 2 or a leather strap. The father will sometimes be called upon to perform such punishment. An older child will also be warned that the devil in its many forms likes to prey upon children who stray away from home, who cry a lot, and who are disobedient. The threat of the *pukuh* or *?ihk'al* (a hairy black three-foot tall evil being) should not be used at night because if it heard its name at such times it would be certain to actually come and do harm. The *?ihk'al* is a special threat to children for if it hears one crying it will come to carry it away. It's presence is often heard in the night, and many strange noises of the night are believed to be the work of the *?ihk'al* wandering around the house and perhaps trying to get in. This being will also carry off a disobedient child, and is genuinely feared by adults as well.

1.4.7. Play

A baby gets its first plaything when about six months old. A small gourd filled with dried seeds is tied to the baby's wrist. This *scuil* *sk'ab* rattles when the baby moves its arm and helps to keep it occupied. Sometimes a string of beads is tied to the wrist instead. By the time a child can hold on to things it has been given a number of objects to play with; a decorated rattle of the type used for Carnaval, an interestingly shaped stone, a piece of plastic wrapping, a sheet of paper, or perhaps some trinket bought from the Ladinos.

By eighteen months the child is generally walking a little and has begun to explore in earnest the house in which he lives.

He is constantly getting into things and being warned not to touch, but his natural curiousity will not be stifled, so the warnings have little more than momentary effect, even when he does understand. The child is even more curious by two-and-a-half and is allowed to play outside with a sibling or cousin for limited periods, always under the mother's watchful eye. With the beginnings of speech come new opportunities for play. The child mimics its mother, tries to hum and sing like her, says those words, often of Spanish derivation, that evoke the mother's laughter, and greatly enjoys mutual handslapping, pinching, tickling, and playing peek-a-boo with mother or elder sibling.

Young children truly love little repetative verbal formulas and pick these up from parents readily. There is, for example, a belief that a caterpillar (*čup*) will come and bite a person who leaves unfinished a fresh ear of corn which they had started to strip of its kernels, unless somebody will come and pinch the skin on the back of each of the person's hands while saying *lik lik lik*. More than once I have heard children under three ask mother or sibling to play "lik lik lik", having seen it done once or twice before. Too, there is a remedy for snoring which consists of holding a *šk'intun* lizard under the patient's nose three times in succession, and each time pronouncing the phrase *sok sok ni?*. This same formula is used to clear the plugged up nose of a two-to three week old infant. Once as I was on the trail with two sisters of four and five, a *šk'intun* was spotted. This was enough to get the girls to put their fingers under each other's noses while laughing and saying sok sok ni? until the game wore off after a couple of minutes.

Once a child is three or four he can spend considerable time out of doors in the company of other children. They stick relatively close to home and rarely play with more than six or seven other children, often with only one or two. Nature's bounties are explored; trees are climbed, usually by boys; flowers are gathered; whistles are made from the stems of some plants; berries are picked and eaten; insects are found and teased; and rocks are thrown.

Such social pastimes as follow the leader and a sort of hide-and-seek (nak'ton hba) are indulged in, as well as searches for various things to satisfy the urge to explore and discover. Playful wrestling among boys is as common among boys as simple chasing and falling is among girls. Playing "ball" with a sweet lime or orange has an inexhaustable number of variations such as playing catch, chasing the ball, trying to hit things with it, etc. Some children even find an old rubber ball to play with. Hopping, running, skipping, and jumping are practiced by children of both sexes.

Both sexes play together almost indiscriminately until about six or eight, after which cross sex playing slackens off considerably. Even before this girls prefer to play with girls and boys prefer boys, but the small number of neighboring children does not always allow such selection. Children tend to play primarily with siblings and neighboring relatives. Older children readily play with younger ones in the absence of their own peers.

Most little boys play with marbles and homemade tops as well as a Ladino bought propeller that is spun in the hand until it flies into the air. Almost every boy has a slingshot. The father will make one for his son before the boy is seven or eight, after which time he is old enough to make his own. They are carved from a forked twig of coffee, guava, orange, or other suitable tree, and fitted with strips of rubber bought at the market. A boy doesn't stop playing with his slingshot until he reaches twelve or older. Some older boys will also make a bamboo gun that shoots lumps of dirt a few feet by means of a bent piece of bamboo that springs forward when released. More common is a noisemaking blowgun (tuhk'alteʔ) made by hollowing the pith from a two foot length of the stem of certain plants and blowing pieces of pith through it.

Little girls prefer to play at taking care of a corncob child which they dress up in a leaf skirt and a sash made from a strip of banana tree bark. A piece of cloth filched from the house serves as a reboza for carrying the doll. They will then talk to it, pat it, and generally take care of it the way they would a younger sibling. Girls play also at making mud tortillas, using a broken potsherd as the griddle. They line an imaginary fire with the three yok'et stones and carefully shape the mud tortillas before putting them on the play griddle.

Sometimes a group of children, particularly girls, will

will play at drinking trago, the hard liquor called pos̆. They will use a little bottle filled with water and take turns drinking from it and pronouncing the ritual words and their responses that are so important to the game, just as the adults do when drinking real liquor.

Children, in this case usually boys, will also play at butchering a bull and carving its meat into portions, just as adults do. Children however, use a fallen banana trunk as the bull and little bamboo knives are used to carve up the pieces of "meat" that are then wrapped in pieces of banana leaf and put in a pile.

One of the commonest imitative games is to play at being or taking care of a bull. The children of both sexes walk on all fours like a bull, shake the head, and make the deep moaning sound of a bull. One child will sometimes take a piece of rope and tie another to a bush, or he may tie a couple of bamboo horns on his head and dance around claiming to be doing the "dance of the bull" which is done by adults during Carnaval (loʔil). At other times a round section of log with a rope tied to it is sometimes used as the bull. This is pulled along, tied to a tree or bush, taken to drink at a stream, and so on, in imitation of the father's changing of his own real bull. Sometimes this game degenerates into pushing the log bull down a hill to see it roll, and then pulling it back.

Just as children play at being a bull, they also play at being or having a horse. They will walk on all fours and snort like one. Sometimes they will ride a stick or pole pretending that this is a horse. Other times a child will sit on one of the low benches (c'amalte?) while another pulls it around the house.

One of the more interesting games is when the children play at being the authorities in the cargo hierarchy of Tenejapa. The child who is president (kunyerol) tells his deputies (rehroletik) to go and grab so and so to put him in jail (ba caka tal mene) just as they have seen done in real life at fiestas. There are other variations, but the parts that the children like best are repeating the phrases used by adults and chasing after another child so as to bring him back to jail.

The imitative aspect to games that is so striking surprised me one day when I noticed the two sons of my assistant playing with a fallen banana log with a number of holes punched in the top. They were pushing pieces of wood in the holes and then jabbing the holes with their fingers. They explained that this was their karabatora (tape recorder), and that they were performing all of the deft punching of buttons that they had seen me do many times with my tape recorder.

When girls reach eight or so they sometimes play games relating to sex and marriage. One group that I noticed was squatting in a banana grove while the leader passed out unripe bananas to the other girls saying, "this is your wife, and this is your wife, and this is my wife", until each was appointed the care of her own banana-wife. Later they changed roles, turning the bananas into drunken husbands. At about this age or earlier girls will search for and find the *butbut ?itčan*, a small worklike ant-lion that is supposed to be placed on the nipples of a woman's breasts so that it will bite and make the breasts grow.

1.4.8. Work

Although much about the play of children can be seen as preparation for the work and social relationships that are part of an adult's role in society, children also begin to participate directly in these aspects of the culture, little by little, by the time they reach two-and-a-half and are able to speak and understand a little. In part this participation is simple observation at first hand and in part it comprises the performance of household chores; first on a very minor scale and in between bouts of pure play; later, with age comes more work and more responsibility as a part of the household economic unit.

The earliest manifestation of a child's help with household chores stems from attempts to playfully imitate the actions of the mother or an older sibling. The child of thirty months will try, very ineptly at first, to blow the house fire into a flame, to stir cooking food, to pour water, to scatter bits of tortilla for the chicks that wander into the house, to pick up dropped items at the mother's request, to shoo grown chickens out of the house, to give greens to the family rabbits that live in the house, and so on. With the mother's guidance and sometimes despite her annoyance, the youngster becomes a little more skilled at such chores by the age of three or so. By this time the child will have accompanied the mother on short forays to gather firewood, collect vegetable greens, pick fruit, get water from a nearby spring or river, and look for eggs that the chickens may have laid. Perhaps the child has even been carried to one of the distant market places, and certainly it has been taken to visit relatives on a borrowing mission or just so the mother can gossip.

By the age of four the child can be quite helpful to its mother in performing minor tasks, helping to sweep the house and feed the chickens, watching a small baby, carrying small loads of firewood and jugs of water from the spring by means of a tumpline when accompanied by mother or older sibling. Little girls begin to learn how to make tortillas, to strip the kernels from corn by means of a corncob, even to grind the corn into maza. Little boys begin to spend more time outdoors, helping the mother when needed, playing when he can. Both sexes learn to kill fleas when the blankets are taken out in the sun periodically. Skills that the child begins to use in assisting the mother are developed with each year, and by the age of six or seven there are many little tasks that the child can do alone. A boy may be taught at this time by his father how to make his first net bag (čohak') from the fiber of the maguey plant. A girl may begin her first tentative efforts at learning to weave. Children of both sexes have visited the milpa with father and mother several times, and perhaps have participated in a minor way in some of the easier tasks of planting or weeding. A girl generally goes to the milpa only when her mother is along to help also. A boy will begin at this time to accompany his father alone to the milpa, to change the family bull or mule, and on some trips to Tenejapa center for a fiesta or the Sunday market.

By eight or nine a boy is able to work in the fields with his father on a less limited scale. If he doesn't want to once he is old enough, he is whipped; otherwise he would become spoiled and lazy, never learning how to take an adult place in society. A girl can take over for her mother in running errands, sweeping, and sometimes in grinding corn when necessary. If she hasn't begun to learn to weave yet, then this is the time to begin. She can also get water from a nearby spring alone.

A poor family, and a rare one at that, may sell a child to a Ladino, once it is able to work, sometimes as early as six or seven. The Ladino pays in the neighborhood of fifty to a hundred pesos or a couple of pigs and puts the child to work in Tenejapa center where the Ladino lives. A boy will usually leave his master and look for a job on his own once he reaches sixteen to twenty years of age. A girl will often stay until and if she gets married.

1.4.9. School

In addition to working and playing, some children go to school. *mahosik'* has one school and two Indian teachers serving the whole paraje. School is meant for children between the ages of six and fourteen, although there has been a recent campaign to get young adults to attend school in the afternoons to learn Spanish. School operates on a semi-regular five day a week basis with frequent intervals for the teachers to go to San Cristobal. Theoretically class starts at nine A.M. and ends at about four P.M., the day being broken up by a number of recess periods.

Formal education in the school emphasizes learning Spanish through rote exercises of verb conjugations, memorization of simple phrases, and learning songs, as well as other kinds of drills. The rudiments of writing are taught in addition to some basic arithmetic, drawing, biology, telling time, and hygiene. The Spanish alphabet is adapted to Tzeltal for reading elementary I.N.I. texts in Tzeltal, but reading and writing still emphasizes the Spanish language.

The child learns something about the history and geography of Chiapas and Mexico as a whole so that he will be able to pay lip service to a feeling of national participation, even though the isolation of the Indian community precludes any deep feelings of being Mexican.

One of the functions of the school is to fashion a team of basketball players from children in the paraje in order to compete with teams from other parajes on school days and on Saturdays. Home games draw a good many of the school age children as well as younger ones who come to watch. Games in nearby parajes manage to drum up many children over eight who follow the mounted teacher and walking team to a neighboring community in order to spend the day watching the game and rooting for their own team.

Although there are about 125 children of school age in mahosik', it is a rare day when more than sixty show up for class. Parents want their children to stay home and help with the milpa and housework in many cases. Other parents are distrustful of the value of an education, especially for their daughters. Many children are afraid to go to school alone, or simply dislike it, and their parents are reluctant to force them to go. When the number of children that have come to school on a given day is below what the teacher considers sufficient, he will take the group of youngsters that have already arrived at school and go around the paraje visiting houses with school age children in an attempt to fetch delinquents through social pressure. He then returns to school with an augmented class and begins to teach.

Each year the I.N.I. school inspector comes to the school for a day or two so as to evaluate the teaching of the teacher and the progress of the students. During the time of the government inspector's stay there is usually entertainment including such things as puppet shows and record playing. At this time most of the children in the paraje show up for the festivities.

School is becoming a more influential experience in the lives of Tenejapa children with each passing year. The number of Indian teachers is increasing, largely through the efforts of I.N.I. (National Indian Institute). They are trained by

I.N.I. and generally speak fluent Spanish. With the decline in the number of Ladino teachers who are often noted for being poor instructors, cruel, and opportunistic at the expense of the Indians, children are beginning to learn more relevant information from more sympathetic sources. With the slowly increasing contact between Indians and Western ways, acculturative forces are exerting powerful influences on the Indian community. Parental objections to formal education for their children are becoming less strenuous, and children of the new generation are learning more and more alternatives to the ways of their forefathers. These changes and increasing communication through radios and roads are paving the way for a predictable process of rapid acculturation that is now in its infancy. Meanwhile many of the old ways continue relatively undisturbed.

1.5. Adolescence and marriage

Childhood blends gently into adolescence (tek'leh) around the age of twelve or thirteen. Girls acquire modesty and begin to avoid play contacts with male non-relatives. Boys still spend considerable time playing, especially the game of basketball, but they tend to give up the slingshot and many of the forms of play in which they had participated before. Relations between boys and girls become more delicate and reserved. A period of intra-sex solidarity gives way after a while to youthful experimentation at the subtle game of courtship with its own linguistic routines and interaction rules. Courtship in earnest replaces experimentation in a subtle way culminating in informal unions and marriage. Rarely a boy or girl may get married at the beginning of adolescence, but marriage is more common for boys of eighteen to twenty and girls of sixteen to eighteen. With marriage the childhood cycle is complete and the young couple prepares to conceive and bring up children within the framework of the customs and traditions that shaped their own lives.

1.6. Conclusions

The interaction patterns characterizing childhood can be drawn from the preceding discussion in a series of general or normative statements. The relatively isolated household and surrounding garden is the major geographical aspect of the young child's lifespace. The size of the garden may be quite variable, but much of the social interaction occurs in the clearing onto which the front door of the house opens. This patio (*?amak'*) may range in area from about 200 square feet to five or six times that. Limitation of the child's lifespace to house and patio areas decrease as the child grows older. He begins to explore his environment in ever widening circles, in the company of older siblings by around the age of three, and alone by the age of five or six. Meanwhile he will have accompanied his mother or a responsible elder sibling on visits to other houses, on trips to the weekly market, on errands, and to water sources, visually experiencing a variety of environmental features and assimilating conceptions of distance and direction.

Visiting occurs during daylight hours and the average house may receive an average of one visit per day from a member of some other household, usually a relative. Non-relatives come much less frequently, usually on business, and rarely speak to a child younger than four or five. A relative may bring along one or more of their own children who then interact with the child. If the visiting child is three or four years older the interaction may possess some of the characteristics of a joking relationship. Visiting adults that are close relatives do speak to the young child, usually in the form of commands or answers to questions put by the child.

The child often overhears speech in the house during the day when there are visitors. At night he overhears the speech of adolescents and adults in the household as they huddle around the fire exchanging gossip, daily activities, and verbal lore. Moralistic tales, legends, and bits of cultural information are sometimes addressed to the child that can understand them, and the child's questions will often be answered by stories that are traditional. On the other hand the child may be involved in play with siblings when not interested in the discussion, limiting the amount of speech heard or overheard.

The child between two and six is likely to have one or more older and/or younger siblings to interact with; and after about the age of three, much of the interaction is verbal, the older child being the leader and sort of teacher, while the younger child follows and imitates the other. Imitation extends to utterances, and these are rarely corrected by the sibling. From the ages of about one to three the child is allowed to play in the house or patio with an older sibling, but only for relatively short periods of time. Older girls (from about seven to twelve or older) are allowed to carry younger siblings and relatives on the back with the carrying sash, and will even take them some distance from the house on occasion.

From birth to about age two the child is almost constantly in its mother's company, wrapped in a swaddling cloth and on the mother's lap or bed for the first few months, and much of the time in the sash on the mother's back which can be swung around to the front for feeding. After one and a half to two years the child is allowed to walk around within close reach of the mother in the house or outside, verbal contact being maintained between the two at frequent intervals, on the part of the mother. After the age of two the child may spend considerable time in the care of its maternal grandmother allowing the mother to carry out chores unhindered. Although older siblings and relatives may enter the child's life after about two on a verbal basis, the mother accounts for the major portion of linguistic input directed at the child at least until the age of four or five. Peers and older children constitute an ever increasing segment of the child's input sources during this time and by five or six have taken over direction of a large share of the child's time and verbal input. Girls tend to remain around the house and in the company of the mother and female relatives, learning to make tortillas, to sing, and to participate in other female activities. Boys begin to devote a large proportion of their time to outdoor play and exploration with neighboring peers and relatives, later assisting the father in male duties and going to school. Some girls do go to school, after the age of six or seven, but not the majority.

The father does talk to the young child, but not really very much, for he doesn't spend a significant portion of the daytime at home except when resting off a hangover, tending the garden, repairing the house, or on Sundays and exceptionally cold and rainy days. On the other hand, when he does talk to a young child he will occasionally correct the child's speech if a word is mispronounced or an incorrect word is used.

The mother plays the role of protector to the child as well as that of punisher for minor offenses. Although mention of the father or grandmother is used to threaten children who misbehave as often as is a slap or verbal reprimand, actual whippings, beatings, or other punishment from either of these is reserved for the rare occasions on which the child misbehaves in a major way.

Because the mother is the primary linguistic socializing agent up to the age of four or five for boys and longer for girls, it is not surprising that young children sound much like their mothers in many ways, as for example in intonation patterns, the use of particular expressions, and in the employment of certain modes of speech such as sarcasm and irony with great frequency.

The forms that social interaction involving children takes; the frequencies, participants, and settings; all are responsible for the kinds and amounts of speech that the growing child hears and takes into unconscious consideration in the process of acquiring the knowledge and the habits that we can call linguistic and sociolinguistic rules. Interaction patterns involving only adults also have their effect on the kinds and amounts of speech that are overheard by children. Although baby talk is practically nonexistent in Tenejapa, the nature of speech routines directed by adults to children suggests that the variety of grammatical structures is limited to a large proportion of commands, simple questions, and exclamations. Consequently, barring the existence of a powerful innate component of formal and substantive universals as proposed by McNiell (1966:50) and others, it is likely either that children of three or four have a more limited command of the range of possible linguistic structures than has been previously supposed (cf. McNiell:15) or that overheard speech plays a much more significant role in language acquisition than is generally assumed.

Taken as a whole, child rearing can be succinctly characterized as permissive, mother oriented for the first few years, informal, and relatively flexible within limits imposed by potential dangers to the child's health and spirit. This orientation has direct effects on linguistic input. Indirect determinants of linguistic input to which the child is exposed are such sociocultural factors as the relatively isolated settlement pattern, the merging kinship system, the clan-lineage remnants from earlier times, the atmosphere of witchcraft and envy that pervades social relations, the world of spirit beings, the importance of the *č'uel*, the sexual division of labor, male drinking habits, and many less evident influences that determine interaction patterns and direct the nature of child rearing norms.

2. ACQUISITION OF BOTANICAL TERMINOLOGY

2.1. Theoretical background

An important aspect of the acquisition of communicative competence is the development of the ability to produce words and understand their meanings. In fact the development of communicative competence proceeds from the use of sounds (phonology), to words (semantics, lexicon, naming behavior), to combinations of words (syntax, grammar, phrase and clause formation), to appropriate use and interpretation of sounds, words, and their combinations in particular social contexts (speech styles, routines, code switching, sociolinguistics). The beginnings of the development of each of these aspects in a given child precedes the full development of any of those that began earlier so that in practice the various aspects of language development can be thought of as taking place simultaneously. When one focuses on verbal abilities, other channels of communication such as gesture, eye contact, and posture, become side issues.

The development in the child of the ability to produce words and understand word meanings can be labeled developmental semantics, lexical development, or the development of naming behavior. The study of such development involves, not a search for semantic universals nor the formulation of an etic grid on which to map the terminological systems of all cultures, but rather longitudinal studies of how children in a given culture or speech community learn the names of things that exist in the social as well as the real world. A child's lexical development is logically prior to his syntactic development, and although both take place at the same time, their beginnings do not. The combination of words into syntactic units such as phrases and clauses alters the meanings of the words taken individually just as sociolinguistic rules further alter the meaning of a sentence that is produced in context.

Some of the important aims in a study of lexical development are 1) the accumulation of cross-cultural data about the order in which a child learns to name things, both in terms of semantic domains and in terms of the structuring of given domains, 2) knowledge of the sorts of attributes that a child uses at various stages of development to identify things by giving them names, and how these attributes differ in kind and number from one domain to another as well as from one stage to another, 3) the gathering of data regarding the way in which a child names items for which he does not already know a term that has been accepted by the speech community for designating such items, and 4) increasing our knowledge about the ways in which a child's previous knowledge of correct names for things aids him in learning the names of things for which he does not have a term.

Related to these aims are a number of subsidiary problems, the study of which can help to organize the data across cultures. We want to know, relative to a given culture, from whom the child learns the names for things at a given stage, and in what context;

how many items in a particular domain a child can label correctly at varying stages of linguistic development; what sort of name is first given to a child for labeling an object, general or specific; what sex differences there are in the ability to assign names to objects in various domains; what methods are employed to teach a child the names of things; what items are subject to linguistic taboos to the extent that a child is not supposed to use the terms, and from whom the child learns such terms; what are some of the motivations for children to learn the names of things; what kinds of response will a child give when asked to name an item for which he has not yet learned the correct name, and does this vary with age and sex.

The study of lexical development entails naturalistic observations, structured and unstructured interviews of children and adults, and the construction of specific tasks to be performed by the child. These can take the form of tests of the individual's ability to recognize and name objects, as with the naming test, or of the individual's ability to recognize names of items and relate them to definitions or to nearby objects. Another task is to ask the child for a listing of item names apart from any stimulus objects. All such tasks involve the selection of particular domains to work with, e.g. plant terms, kin terms, animal names, household utensils, etc.

I chose the domain of botanical nomenclature for investigating lexical development for several reasons. Tenejapa children begin to learn the names of plants at a very tender age. This is due in part to the fact that a wide variety of plants have important economic functions in Tenejapa and hence are named. Tzeltal plant nomenclature, taxonomy, and uses have been investigated intensively for several years by Berlin, Breedlove, and Raven (1966, 1968) so there exists a large body of data on the plant world of the Tzeltal adult to which data on child acquisition can be compared. I felt that the task of identifying plants would hold a child's interest more than would a similar task involving some other domain of nameable items; and plants had the advantage of being more or less fixed in position and context so that one child could be asked to respond to the same plant in the same context as the next child, establishing a form of control so that the responses of different children could be profitably compared.

2.2. Tzeltal plant taxonomy and nomenclature

The Tenejapa Tzeltal plant taxonomy contains a core of between five and six hundred expressions or basic plant names that can be considered generic names. When supra-generics, specifics, and varietal names are included, the number of plant names runs to more than one thousand.

The taxonomic hierarchy of plants is relatively shallow, ranging from three to six named levels. That is to say, there are some labeled terminal taxa that may be traced through five successively more inclusive terminologically distinguished levels or nodes in order to reach a unique beginner that could be glossed "plants".

Other terminal taxa may be included in only two higher taxonomic levels; still others in three or four.

There is some dispute about the existence of a labeled unique beginner in the Tzeltal taxonomic hierarchy. The word te?ak', literally "tree-vine", is structurally parallel to čanbalam, literally "snake-jaguar" which means "animal", and can in context, serve to indicate a concept that could very nicely be glossed "plant". The next lower contrast level is divided into four very general classes and a number of small and isolated classes, the members of which are not identifiable as belonging to any of these four. Examples of the latter are halal ("bamboo") and lo?bal ("banana"). The four large general classes are te? wamal, ?ak', and ?ak, which can be conveniently glossed "tree", "herb", "vine", and "grass" respectively. In addition to labeled taxa in the hierarchy, there are also a number of recognized but unlabeled midlevel taxa (Berlin, Breedlove, and Raven 1968), and their existence further verifies the ability of the Tzeltal to notice formal and functional similarities that are not necessarily culturally relevant.

Principles of plant nomenclature are all too easily neglected in a study of flora. These principles are rules for increasing the predictability of the application of particular linguistic forms to specific plants. They are based upon prior observation of regularities in the formation of certain kinds of names for certain kinds of plants. A child faced with the problem of giving a name to a plant for which he has forgotten or does not know the name, is in the position of being able to invent an appropriate name based upon already acquired vocabulary and whatever knowledge he has about the plant or can gain from looking at it or smelling it. This name may remind him of some previously forgotten form or it may stimulate recognition of a plant whose name was learned without benefit of a referent. Such names, invented ad hoc, may be wrong, but their probability of being appropriate is much greater than coincidence if some principles of nomenclature have been unconsciously abstracted from an already existing vocabulary of botanical terminology.

The following is an outline of some of the more important types of plantnames along with some pertinent information about how these name types are applied to the various plants. Regularities of application constitute what is here referred to as principles of nomenclature.

SupraGenerics ' Type 1 names are unanalyzeable unitary lexemes, each referring in uncombined form to large classes of plants, all of which share the attribute or attributes designated by the term. The terms are descriptive themselves and are used in other semantic domains besides that of plants. Plants are grouped into these classes on the basis of morphological characteristics rather than functions, and more than ninety percent of all named plants belong to one of these four major groupings. The four names of this type are *te?* ("tree"), *?ak* ("grass"), *?ak'* ("vine"), and *wamal* ("herb"). They are all productive, when combined with other forms, of generic names which can be further combined in the formation of specific names.

Alone they are often used as substitutes when more specific names are not known or remembered, sometimes with the addition of the derivational suffix *-il* which designates membership in a class.

Type 2 names are similar to those of type 1 but have a less definite status in the taxonomic hierarchy. They are unanalyzeable unitary lexemes referring to large classes of plants which are grouped into the classes on the basis of features, functional and morphological, that cross-cut the groupings of type 1 names. Two such names have been isolated so far, *bok* ("plants with edible leaves") and *č'iš* ("plants with thorns or stickers"). Like names of type 1 they combine productively to form generic and specific names, but are frequently used alone as substitutes for more specific designations.

Type 3 names comprise those generic names which have been elevated in status to include other generics as well as the homonymous generic. Such taxonomic expansion has occurred with a small number of culturally important plants, and is related in some cases to Hispanic introduction of food plants with marked functional similarities to native food plants with already existing generic names. In other cases it is related to the recognition of anomalous forms of obviously related plant types, which had developed separate generic names because of a need to distinguish plants within a taxon due to the cultural importance of the taxon. Examples of type 3 names are: *čenek'* ("beans and peanuts"), *ʔišim* ("grains"), *loʔbal* ("bananas and plantains"), *makum* ("blackberries and strawberries"), *hihte?* ("oaks"), *č'opak* ("soaproot plants").

Generics Type 4 names are morphemically unanalyzable unitary lexemes corresponding to basic generic taxa. They are unique to plants, none of them being metaphorical transfers from other semantic domains. Most of them refer to plants that are edible, useful, or otherwise culturally important. Some of them are derived from Hispanic forms, but the majority are not. Though many of these forms label taxa that may further be divided into specifics, they are quite specific enough of reference to be used unqualified in most conversations unless a contrast is required to disambiguate an identification. Examples of type 1 names are: *?on*, *bat*, *sun*, *cuy*, *cib*, *moen*, *makum*, *cu?um*, *mumun*, *mayil*, *?išim*, *?uskum*, *čenek'*, *manko*, *tulesna*, *kulantu*, *kuliš*, *paterna*, *č'omate?*.

Type 5 names are like those of type 4 in all respects except that they can be analyzed into two bound morphemes each, the first of which is [šɪ]. Examples are *ščekul* and *sc'ul*.

Type 6 names consist of noun-noun or adjective-noun compounds, neither member of which comes from the domain of plants. These names are usually metaphorical extensions from other domains, especially animals and body parts, and are often highly descriptive of the morphology of the plants to which they are applied. A few are descriptive of uses, dangers, or growth [illegible]s of the associated plants. Examples of such generic names [illegible] *č'ični?* ("bloody nose"), *ca?tuluk'* ("turkey excrement"), *balamk'*[illegible] ("jaguar festival"), *?ihk'uye* ("black teeth"), *nitem k'ahk'* [illegible]ulled fire"), *kurupsin*

("mouse pants"), yehk'ečšuš("fly hoof"), *yak'c'i?* ("dog tongue"), *yakan paloma* ("pigeon leg"), *šanab mut* ("chicken sandal"), *k'ab ščoh* ("puma paw"), *sabal c'unun* ("early hummingbird"), *yakan k'ulub* ("grasshopper leg"), *k'u?čič* ("mother's brother's wife's shirt"), *čikinib* ("armadillo ear"), *takin č'iel* ("dry growth"), sconlum ("earth's pubic hair"), h?antun kerem ("Antonio boy"), šmal waš ("Maria fox"), petumaš ("Peter monkey"). Plant names of this type, when associated with plants of the classes *wamal* or *?ak'*, may add one or the other of these class terms after the name. This usage is optional, contributing nothing to the name but redundancy.

Type 7 names consist of type 1 terms preceded by a single attributive, usually a descriptive adjective or noun. Some of these relate to color, size, texture, smell, or taste; other to shape, thorniness, capacity to produce itching, and so on. There are also a host of less productive attributives that can qualify the type 1 terms by relating them to substantive phenomena of other domains. Some of the attributives are reduplicates or partially so (e.g. *pihpih*, *peč'peč'*, *pečeč'*, *cococ*, *č'uhč'ul*). Reduplicated forms are observed to occur primarily with *?ak* and *wamal*. Some examples of the generic type 7 names are: *sakilte?*, *cahalte?*, *k'ante?*, *winikte?*, *?ac'amte?*, *hihte?*, *pomte?*, *čahp ?ak*, *ca?ak*, *k'an?ak*, *cahal?ak*, *cuhkum ?ak*, *k'unil ?ak*, *pihpih?ak*, *sansire?ak*, *kamare?ak*, *k'am?ak'*, *?ičil?ak'*, *čin?ak'*, *pahal wamal*, *sak'al wamal*, *tunimčih wamal*.

Type 8 names consist of type 2 terms preceded by a single attributive of the type contained in type 7 names. Some examples are: *tuhk'ulum č'iš*, *k'an č'iš*, *č'išitah*, *paitah*, *č'aal bok*, *sakil bok*, *cemeŋ bok*, *çepuŋ bok*.

Type 9 names consist of an attributive adjective or noun followed by a plant part term. Adjective attributives in this name type are not color terms. Examples are: *pišol nič*, *šuč' nič*, *?ičil ?ok*, *šč'uč'il ha?ben*. Names of this type refer most frequently to kinds of *wamal*.

Type 10 names consist of a color adjective followed by a plant part term which is followed by one of the four major plant class names that are of type 1. Examples are: *cahal nič wamal*, *k'anal nič wamal*, *yaš ?okin te?*, *sak bah te?*.

Type 11 names consist of a type 4 name or more rarely a type 6 name followed by a type 1 name. The overwhelming majority of such combinations occur with *te?* as the second member. The few *wamal* names of this type are in combination only with type 4 names. Only one *te?* name of this type has been noted in combination with a type 6 name; Names of type 11 are generic and almost always designate plants bearing a morphological resemblance to plants indicated by the type 4 or 6 name in first position, but which are known to be different because they bear no edible fruit or otherwise fail to fulfill the important functions of these plants. Plants with type 11 names may be in different major plant classes from the originals. For example *č'opak* is a large shrub whose root can be used as soap. *č'opakte?* designates the castor bean plant which is quite different, and *č'opak wamal* refers to a tiny herb whose leaves and flowers resemble miniatures of the original soaproot *č'opak*. *č'opak* *wamal* is in fact of the same genus (Floribundia) as *č'opak* though a non-botanist might have a hard time seeing this. Similarly the *?on* (avocado) bears fruit while the *?onte?*, botanically of the same species (Persia americana), does not and so has a different generic name in Tzeltal. Nevertheless the obvious morphological similarity of the two kinds of plants is reflected in the nomenclature. On the other hand, although the *?išimte?* and *?išim* (corn) have vague structural similarities, the two are not even distantly related. Our own folk nomenclature employs the words "false" and "mock" in a manner analogous to type 11 names, as in false foxglove or mock strawberry, as well as the more productive form "wild" as in wild rose, wild cherry, etc. Examples of type 11 names besides those mentioned above are: *mumunte?*, *ha?aste?*, *wale?te?*, *čenek'te?*, *ca?tuluk'te?*, *ha?as wamal*, *šašib wamal*.

Type 12 names consist of type 4 names followed by the name of an animal. The plant name in first position is often, but not always possessed by prefixation, and such possession is always implied. When the animal name in second position is *č'o* (rat) or *čan* (snake) the plant referred to is a miniature edition or has inedible miniature fruits of the kind of plant designated by the first position plant name. When the animal name is *čitam* (pig), *kawayu* (horse), or that of some other large animal, the implication is simply that the fruit or other product of the plant is inedible for humans. Examples of such generic names are: *moen č'o*, *šč'omate? č'o*, *smayil čan*, *sewula č'o*, *skulantu čitam*, *k'eweš maš*, *tumat č'o*, *smumun kawayu*, *ščenek' mut*, *makum kawayu*.

Type 13 names consist of *swe?el* ("its meal"), yitah ("its greens"), or *sbokil* ("its greens") followed by the name of an animal. Such names are generic and usually have synonyms. Examples are: *swe?el buluk'sit*, *swe?el čimol*, *swe?el t'ul*, *yitah čih*, *sbokil čitam*. Such plants are eaten by the animal described in the name.

Type 14 names consist of *pošil* ("medicine") or *špošil* ("its medicine") followed by the name of an injury, disease, infirmity, or body part for which the plant can be used as a cure. Examples are *pošil ?eil*, *pošil ši?wel*, *pošil čin*, *pošil mahben*, *pošil me?winik*, *pošil hi*.

Type 15 names consist of *poš* ("medicine") preceded by a generic plant name of type 4, 6, 7, or 11. A notable exception is *cahal či?in poš*, a specific plant name followed by *poš* which makes it a generic name. These plants are named after morphological resemblances to the plants named in initial position and presumed medicinal properties of the former. Examples are: *bakte? poš*, *poloc' poš*, *c'inte? poš*, *mayil poš*, *wale?te? poš*.

Type 16 names consist of type 4 names followed by an attributive adjective or noun. These are generic names apart from the generic names indicated by the type 4 constituents involved. Similarities in use rather than morphology (cf. type 12) are reflected by this nomenclature. For example, *kuliš* is the name for the generic taxon in which cabbage occurs: *kuliš pimil* represents another generic taxon in which the reddish-leafed dandelion fits:

kuliš ?ek' is the name of a tall woody plant with large maple-shaped leaves that are edible when young and boiled. Thus the morphological dissimilarities of the different kinds of plants are here overridden in the nomenclatural system to the extent that kuliš appears in all three different generic names because the leaves of each are edible, and for that matter taste similar.

Specifics There exists some doubts about the exact status in the taxonomy of plants that have names of types 17, 18, and 19. Type 17 names consist of type 3 or 4 names preceded by the qualifier *kašlan* ("Ladino"). As noted earlier they refer to plants that were introduced to the area after the conquest. My own feeling is that these are specific names in terms of native cognition and so I have included them as specifics here. Nevertheless in keeping with the recognition of type 3 names, perhaps those of type 17 should be considered generics. Examples of type 17 names are: *kašlan kulantu*, *kašlan pata*, *kašlan makum*, *kašlan čenek'*, *kašlan č'opak*, *kašlan lima*. One bit of evidence for the classing of these names as specifics is that many of them have synonymous forms that are typical of the structure of the majority of specific names. For example, *kašlan kulantu* - *č'iš kulantu* and *kašlan lima* - *ma?ču? lima*.

Type 18 names consist of type 3, 4, or 7 names preceded by the qualifier *bac'il* ("true", "native"). There is no doubt that these can and do represent specific names. The question arises, however, as to the existence and psychological reality of homonymous forms for some of these on the generic level as contrasts for the forms that include *kašlan*. If names of type 17 are generic, then it is probable that some type 18 names do exist on both levels. On the other hand, if this were the case, then one would expect forms of the type *bac'il bac'il X* to exist. So far there is no evidence that they do. Certainly they don't in natural conversation, and whether or not they could be elicited is open to question. Examples of type 18 names, which incidentally do not have synonyms, are: *bac'il lo?bal*, *bac'il tah*, *bac'il kok*, *bac'il makum*, *bac'il lima*.

Type 19 names consist of any type of generic name preceded by *yihcin*, *slok'omba*, *shoy*, or *kol pahaluk sok*. Because there is a kind of consistency with which certain of these final terms are applied in combination with particular generic names some degree of standardization of such names in the taxonomic structure is indicated. On the other hand some people insist, when confronted with a plant that has previously been designated by a type 19 name, that the plant has no name. In addition names of this type are very productive, being used very frequently to name plants that are new to the namer. The terms preceding the generic names mean that the plant in question is a brother to, a friend to, or very like the plant named by the generic. Synonymous forms are frequent with these names. Examples of type 19 names are: *yihcin nitem k'ahk'*, *slok'omba tuht*, shoy *nitan k'ahk'*.

Type 20 names are also a bone of contention in Tenejapa

Tzeltal botanical terminology. They are unitary lexemes similar in structure to names of type 4, 5, or 6 followed by an optional generic name. Because the generic name is optional but possible, the name without the generic could be considered simply an abbreviation. The existence of type 20 names probably is illustrative of the process of change being undergone by the botanical taxonomy, and it is likely that such forms will eventually become generics themselves, dropping the generic form that is now optional. Examples are: *š?awaš (čenek')*, *škantera (čenek')*, *karawanco (čenek')*, *scil (čenek')*, *šwek' (čenek')*, *čikinib (hihte?)*, *?ik'os (lo?bal)*, *kinya (lo?bal)*, *mancana (lo?bal)*. Evidence for the ambiguous status of such plants in the taxonomy is the fact that informants disagree both in terminology and in placing some of them in the taxonomic hierarchy.

Type 21 names consist of type 4, 6, or 7 names preceded by an attributive adjective or noun. Examples of such attributives are *čahp*, *sakil*, *cahal*, *yašal*, *k'anal*, *?ihk'al*, *muk'ul*, *sera*, *pimil*, *č'iš*, *sak'al*, *k'unil*, *beleko*, *petrona*, *hot'em*, *čohčoh*, *mokoc*, *k'isis*, *k'eweš*, *ca?*, *móro*, *ču?*, *č'ič*, *š?awaš*, *mancana*, *macu*, *kinya*, *šlumil*, *c'irin*. Unlike attributives for generic names, attributives for generic names, attributives for specifics include plant names as well as animal names, colors, shapes, person names, terms borrowed from Spanish, and so on. Color terms are the most extensively used attributives. Examples of type 21 names are: *š?awaš kahpe*, *sakil bat*.

Type 22 names consist of type 4, 6, or 7 names preceded by noun-noun or adjective-noun combinations similar to and including some type 6 and type 10 names. Examples are: *sakyok hihte?* *ca?pat hihte?*, *č'ič'ni? šašib*, *yašal nič čin?ak'*, *k'uš balil šašib*, *k'uš ben c'anan*.

Varietals Type 23 names are varietals. I have noted varietal names occurring in only three generic taxa on the basis of nomenclature; *čenek'*, *lo?bal*, and *či?in*. These are very important food plant groupings. The varietal name, type 23, consists of a color term preceding the specific term. With *lo?bal* and *či?in* the color term is *sakil*. Several *čenek'* specifics include two or more varietals. Examples of type 23 names are: *sakil cahal či?in*, *sakil cahal lo?bal*, *cahal šlumil čenek'*, *c'irin šlumil čenek'*, *?ihk'al šlumil čenek'*, *k'anal šmoil čenek'*, *c'irin howiel čenek'*.

Type 24 names are questionable as varietals. If accepted as such they are three in number: *muinte? (šlumil čenek')*, *?ik'sam (šlumil čenek')*, *?ik'sam (šlumil čenek')*, *c'ir (š?ak'il čenek')*. The optional nature of the "head terms" lends some credence to an attempt to more properly characterize the "attributives" as specifics or even incipient generics. They are treated here as varietals on the basis of one informant's knowledge.

2.3. Geographical context

Once botanical nomenclature had been selected as a basis for a studying lexical development, it was necessary to get a rough idea of the floral potential of the area in which I was living. Because the municipio of Tenejapa comprises at least three distinct ecological zones on the basis of elevation and many more when such factors as soil type and degree of cultivation are considered, it is not surprising that the number of named plants in any one paraje is considerably smaller than that of the municipio as a whole. Perhaps three hundred named generics in the paraje of Mahosik' would not be an overestimation.

Mahosik' lies on a verdant mountain slope that extends from about 5000 to about 3500 feet in elevation. At the bottom the river Tanate separates mahosik' from the municipio of San Pedro Chenalhó, inhabited by Tzotzil speakers. Although frost never descends upon mahosik', altitude and soil conditions limit corn production to one crop per year. Bananas are plentiful and, higher on the slope, patches of uncleared oak forest occur. Natural springs dot the whole valley, furnishing drinking water as well as creek beds in which moisture dependent plants survive the year around.

Each of the forty odd households in the paraje is generally isolated from other households both by distance and by an often lush garden of wild and purposefully sown plants such as fruit trees, bananas, often sugar cane, sometimes coffee, bushes, and grasses. A small path leads from the door of each house to a main trail, between 10 and 100 yards away, that winds its way around the valley, joining other trails on the way. Probably no household in Mahosik' has fewer than fifty different readily nameable plants within a radius of 100 yards. Nevertheless, to make a list of 200 named plants it was necessary to wander a bit further afield. I finally decided on a two mile long path, to be described later, bordered by about 200 specimens of named plants that could be used to test the knowledge of children as well as adults about botanical names. Hereinafter this path is referred to as the plant trail. Although the naming task with which the plant trail is concerned forms the bulk of the data on internal aspects of lexical development, observation and informant interviews were used to get at some of the external aspects of how children learn the names of plants. The latter, which includes teachers, teaching methods, and situations in which children are taught plant names, will be discussed first.

2.4. External aspects of learning plant names

From the time that an infant opens its eyes and notices its surroundings, it is exposed to a portion of the plant world. The typical house has rows of corn ears in the husk stacked on planks raised slightly off the dirt floor to prevent rotting and to inhibit animal marauders. In addition bunches of bananas lie on the rafters to ripen while stacks of firewood are also stored on the rafter crossbeams so as to dry and burn better. The house itself is constructed of planks cut from certain trees that are tied to each other and to a skeleton of tree trunk poles with the bark of particular trees. The roof consists of overlapping layers of thatch grass. Some beds are made comfortable by heaping them with dried banana leaves or fresh pine needles. Pine boughs adorn the pinewood cross that is a feature of every house. Stools for men and

Short planks for women are rough hewn from tree trunks as are the bed planks that are present in many households. Chili peppers and a crude short shrub broom are year round household items. Freshly gathered seasonal fruits such as mangos, matazanos, oranges, grnadillas, guavas, peaches, avocados, and custard apples, will be present in the house for days at a time. Beans are stored in net bags or in earthenware pots for months and some families have large bags of peanuts for eating after the harvest. At various times of the year wild greens, guash, squash, sweet potatoes, manioc, husk tomatoes, sugar cane, and other plant products are brought to the house for preparation and eating.

Even before the infant is able to eat them fruits and some other foods are offered by the mother in response to whining, crying or other noises that it may make. She will pick up a fruit for example, and hold it out to the infant while saying, "Do you want a banana?". The child will often take the fruit and play with it for a while. Such behavior on the part of mother and child is anticipatory of plant naming for, as in English, an edible plant product is almost always called by the same name as the plant from which it comes (e.g. an avocado fruit and an avocado tree are both labeled *?on*).

As the child's first few vocabulary items develop, fruits and vegetables come to assume a prominent position in its lexicon. *lo?bal* and *čenek'* are learned as names of foods almost simultaneously with the words for mother, father, breast, urinate, and defecate. Sugar cane, bananas, and other sweet foods are promised the child as rewards for good behavior. Such foods are often given on demand as well if available. The child soon learns that if it insists long and hard enough, there are few things that will be denied it.

By the time the child is consistently speaking in short sentences, around the age of two and a half, it generally can name common fruits, squash, corn, beans, chayotes, a couple of common trees, and a few varieties of wild greens. By this time it has been outside the house a number of times with its mother to collect firewood, look at the garden, get water from the spring, and to visit relatives; sometimes even to visit the weekly market. The child of this age is not only curious about the world around it, but it is able to ask the names and uses of things, which it does. Visits outdoors with the mother are augmented by periods of play with an elder sibling or cousin in the immediate vicinity of the house. The child takes such opportunities to ask the names of plants and other things, frequently forgetting them right afterwards. Often an elder sibling will volunteer plant names in the course of play, saying such things as: "Let's run to the mango!", "We'll dig up the root of pahal mac' či?in", "The guava is fruiting", "Let's go eat sugar cane", "Look at the flowers!", "Don't touch that vine; your ears will rot!" and "Thorns, you see".

The mother is not so playful as an elder sibling, though she does caution the child if it plays with a harmful plant and she often laughs at the child's antics, verbalizing what the child is doing, which frequently turns out to be playing with some plant or other. Many times in response to a "where?" question from the child, the mother will use some plant as a landmark pointing in the general direction and saying, for example "*li? ta ?ala tumati*' ("here, by the little husk tomato plant") or "*lum to ta koke*" ("over yonder near the kok tree"). Frequently the child will point out a nearby plant or pick some leaves, asking "*binti mene*" ("what is that?") or "*binti* *?ini*" ("what is this?"), or just "binti" ("what is it?"). The mother responds with one of the four major plant class names, a type 2 name, the name of a plant part, or a generic name. The name given by the mother depends on a number of factors such as whether or not she knows a name for the plant, the degree of specificity of the name by which she knows the plant, the age and botanical sophistication of the child, the cultural importance of the plant, and the exact circumstances of the particular situation.

If the mother does not know any legitimate name for a plant in response to her child's question, then she might assign it to one of the major plant classes on the basis of its morphology and presumed growth potential, naming it *?ak*, *te?*, *?ak'* or *wamal*. She may even propose some adjective qualifier that seems morphologically appropriate at the time, based on size, texture, color, or other such obvious trait. Or, she may tell the child of some cultural use for the plant, dangers associated with it, or dismiss it as strange ("lom čahp ya?wil") and therefore unimportant. If the plant has some salient feature worthy of note, such as large flowers, fruit, spines, etc., this may be duly noted.

As the child grows older his botanical vocabulary increases. The mother will often try to adjust the level of generality of the plant name she gives to what she feels would be most useful to the child. Constant contact with her child has given her some intuited notion of how much it knows at any given time. If the child is not satisfied with the name given, it may repeat the questions, each time a little more insistently, until it is satisfied with the answer, or it may ask a more specific question such as "*binti* *sbil*" ("what is its name?"), "*bi* *sbil* *mene*" ("what's the name of that?"), or "*bi* *te?ili*" ("what kind of tree?"). Sometimes the child will repeat the name it has learned several times, playing with it, using it in sentences, and so on. When such an interest is evinced, it is not rare that the mother will furnish more information about the plant if she is not preoccupied with something else.

The child will often try to name the plant himself, or make some statement about it, relying on his mother to correct any mistakes made. He may also apply a newly learned term to what he thinks is another example of the same kind of plant. When correct, this enables the child to form a generalized concept of the taxon probably based in part on what could be termed criterial attributes; features shared by members of a taxon that allow one to distinguish them from members of other taxa on the same level of contrast. Salient but non-criterial attributes would probably be internalized also. Then too, some attributes that differ from plant to plant in the same taxon often leave an impression that may be dredged from the memory later when nomenclatural distinctions within the taxon are acquired.

Although the mother and siblings of the child are the most important sources of plant names, they are not the only ones. The father, other relatives, and other playmates assume a more important role in the informal teaching of these names as the child grows older and has more outdoor contact with such persons.

From adolescence on through adulthood and old age a person continues to learn the names of plants. Sources of plant names are increasingly varied as is the individual's total backlog of experience. Friends, acquaintances, and relatives from different parajes compare names for plants, amused by the many micro-dialectal variations. Such variations even exist within a single paraje as do a number of synonyms for some plants. An adult wanting to know the name of a plant, or some other information about it, will ask anyone else present, from adolescent to old man. If opinions vary, discussions follow, with the oldest and wisest or most prestigeful person present winning out. A specimen will even be brought to someone known to be older and wiser than oneself regarding plant names, in order to get an identification.

In sum, the child learns the names of plants in much the same way that he learns to name other things. He begins young to learn the names of things that he eats. When he goes outside he learns to associate some of these things with particular plants and then plant classes. He finds that other plants have names and can be referred to by these names, Some information is volunteered to him, some he has to ask for, and some he overhears. The learning situation is an informal one as far as plant names are concerned, beginning sometime during the second year, intensifying to adolescence, and declining in intensity but continuing nonetheless until death.

2.5. Plant trail task

2.5.1. Task procedure

Having decided that one way of getting at some of the internal aspects of the acquisition of botanical terminology was to construct a naming task in which children would be asked to look at and identify by name a number of plant examples in the natural state, I decided to select a plant trail that could be followed consistently, that passed through different kinds of terrain, and that possessed a large number of examples of different kinds of plants. The trail had to be short enough to complete in one day without tiring a child and long enough to sample a sufficient variety of examples. My assistant would walk ahead with the child pointing out prearranged plants and asking the child to identify them while I stayed behind writing down the responses. The assistant was instructed to ask the child "*bi sbil ?ini*" ("what is the name of this?") when pointing to the plant. If the child answered with a name superordinate to the one that we considered sufficiently specific, he would be asked for a more specific plant name. If for example he designated a mancana lo?bal simply a lo?bal, he would then be asked, "bi lo?balil" ("what kind of lo?bal") or "binti lo?bali" ("what banana here?"). The same procedure was used if an incorrect name was given, incorporating the incorrect name in the specifying question. Comments by the child on uses, dangers, or other spontaneously given information concerning the plants were written down also, and this was found to be quite useful for interpreting the data gathered.

The course of the plant trail was changed after experience with the first couple of children, because of its undue length. Then it became quite standardized and consistent, having only minor changes due to some additions and deletions on the plant list made necessary by changing conditions. Some plants, located once, were lost. Fields were cleared of plants for the growing of corn, making necessary the relocation of some examples. New plants were added to the list, the final list having some 209 different plant names on it. Some unique examples were uprooted. Seasonal changes caused the drying up of some plants and the sprouting of others. For the most part, however, each child was shown the same plant specimens for identification.

The plant trail began in the garden outside of the house in which I stayed, passed a loop through an overgrown riverbed and a cornfield, up onto a grassy knoll, continuing on a main trail to a landmark cross, and returning back to the house. Doing this part of the plant trail with a child took up the morning. After lunch the child would be taken on the second half of the trail, beginning again at the house, passing by two more garden areas and through a cornfield, continuing through a small, uncleared oak forest and then up a main trail to a spring, and finally, after passing on the outskirts of another garden, ending up at the house again where the child would be paid and thanked. Thus the day long plant trail consisted of two closed loops, each beginning and ending in a garden area abounding in readily identifiable plants.

In all, 25 children and 10 adults were formally taken along the plant trail, one at a time. The children ranged in age from about four to about thirteen. The adults ranged from fifteen to sixty. Eleven of the children were male and fourteen female. Five adults were male and five female. The reason for having adults do the plant trail was so that there would be a better basis for evaluating the performance of the children. Because of synonymous plant names and microdialectal variations this was to prove quite valuable. Two of the boys never finished the plant trail because of fear and shyness. The little that they did answer for the first few plants is not included here. Ten of the children were taken on the plant trail by a different assistant, beginning with a six year old girl who had done the plant trail once, so as to control for possible influences that choice of assistant might have on the responses of the children. The little girl is counted twice then, in the data. This is of no great consequence for statistics were not used in the analysis and interpretation of the data.

The results of the plant trail were expected to give insights into the number and variety of plants that could be correctly identified at various ages, the kinds of features of plants that best serve as identificational attributes for children of various ages and their relative salience, the relationship of age to specificity of plant names, the variables that affect the order of acquisition of plant names (e.g. plant importance, commonness of examples, propinquity of plants to child's lifespace, outstanding morphological features, nomenclatural principles), and the age at which it could be said that a child knows the names of most of the plants that are encountered in the area with which he is most familiar. Some of these expectations were fulfilled and others were not. Some unexpected insights were gained. Appendix C contains a digest of the data from the children.

2.5.2. Response types

The responses given by children on the plant trail can be broken down into a number of different categories. The nature of the response not only indicates whether or not a child is able to correctly name a plant, it also shows something of the taxonomic level of generalization that has been attained by the child and the ways in which he has arrived at his own formulation of taxonomic structures. In addition it gives insights into the nature and amount of botanical information possessed by the child concomitant with the cognitive structuring of the plant domain through nomenclatural and taxonomic principles.

a) The child may respond with a name that is in complete agreement with the name appearing on the plant list. In most cases this is the name for the terminal taxon of which the plant is a member. Such a response gives little information about the cognitive processes involved in learning or using the term, although it does generally indicate that the child can properly place the plant within an adult nomenclatural framework. Supplementary information will sometimes show that this is not always the case. Child number 1, for example, correctly identified an example of *mancana* *lo?bal*. However she also used the same term to identify a *sakil* *lo?bal*, a *sera* *lo?bal*, a *maču* *lo?bal*, a *caha* *lo?bal*, a *k'ahk'al* *lo?bal*, and a *kinya* *lo?bal*. In addition she used *mancana* as a descriptive modifier for several other unrelated plant terms as well. In this case one could infer that the child has assimilated a productive rule of plant nomenclature but has not modified its generality by adopting a rule that restricts its occurrence to combination with a limited set of particular forms. This overextension of a "rule" has an obvious analogue in grammar acquisition when, for example, a past tense suffix is incorrectly extended in use from weak verbs to include strong verbs also.

If overextension can qualify the interpretation of a correct response, so too can supplementary information indicating underextension. A two-and-a-half year old girl was observed to correctly identify a *pahčiak'* tree, a kind of guava, that was growing close to the house in which she lived. Later it was found that she could not identify other examples of *pahčiak'* besides the one near her house. It is likely in this case that she had not yet learned to use morphological criteria for identifying members of the generic taxon *pahčiak'*, but rather was correctly naming the particular instance primarily on the basis of its location. The plant trail procedure excludes the possibility of discovery and verification of cases of underextension although the possibility of one or two instances cannot be ruled out. Some of the plants to be identified were in the gardens of two six year old subjects, and one of the trees, the *?uhkum*, was located next to a trail cross, a major paraje landmark.

b) The child may respond with a synonym or micro-dialectal variant that is correct but different from the name on the plant list. Examples of this kind of response are seen in the following pairs in which the left member is the plant list entry:

cacames	-	calames
nitem k'ahk'	-	nitan k'ahk'
hot'ben cawen	-	hot'em cawen
?išim	-	k'ahben
kašlan kulantu	-	č'iš kulantu
pirimahk'	-	prima nahk'
cahl c'inte?	-	sc'inte? h?ihk'al
sboht'il čenek'	-	čakanič
moenč'o	-	kurup sin
pirimahk'	-	we?el t'ul

The lexical variation may consist of small phonological changes or the alternants may be quite different from oneanother. A correct variant in a couple of instances is a unique flower name or the name of a growth stage. *čakanič* is used exclusively for the flower of the *šbohtil čenek'*. In a number of cases fresh corn plants were not available so the dried stalk of corn was used as a stimulus and this invariably elicited the response *k'ahben* which is a correct recognition of the corn's stage of development.

Lexical variation in plant naming by children reflects the naming practices of those from whom the children learned to identify the various plants. The fact and degree of variation in turn reflects family groupings within the community and patterns of interaction existing within and between local family groups. Of equal if not greater importance is the actual area within the paraje where one's house is located. Although there is a strong correlation between area of residence and family affiliations through the male line, there is no one to one relationship. Because intrafamily interactions override local boundaries within the paraje, it is impossible to consider either factor independently in postulating sources of microdialectal variation. A study of adult naming practices for selected plants could, however, go a long ways towards isolating such factors in particular cases and would also aid in the clarification of the exact input sources for children in their lexical development.

c) The child may correctly identify a plant and then spontaneously volunteer additional information about the plant; for example a use, danger, or morphological attribute associated with the plant. The following are examples of this sort:

cacames - cacalmes; ya hmes hk'apaltik ?a ("we sweep garbage with it")
wena - wena; ya hkaptik ta hti?baltik, mut ("we fix it in our meat")
karanato - karanato; ya stak' lo?el sit ("its fruit can be eaten")

Responses of this sort are relatively rare, although they indicate very nicely the nature of child interest that goes beyond the simple naming of a plant. It is interesting that when descriptions are volunteered in addition to the giving of a correct name, almost invariably they concern the edibility of the plant or its product. Noteworthy too, when the name is correct the associated description is also correct. Perhaps this indicates developmental strengthening of a cognitive (associative) bond between word, perceived referent, and stored supplementary information. The limited data at hand does not warrant a stronger statement of such a suggestion, but common sense dictates its liklihood.

d) An accidental variance from the normal plant trail procedure introduced a new type of response on several occasions in which the child did not recognize or name a plant, whereupon the assistant mentioned the cultural use made of it, after which the child was able correctly to name the plant. This occurred with the plant *č'opak*. When children nos. 8, 11, 12, 14, 16 and 18 failed to identify the plant, they were told that it's root could be used as a kind of soap. Each child was then able to supply the correct name, indicating that perceived morphological attributes of some plants are not as salient for the elicitation of a naming response, as culturally defined attributes that may be learned in association with a plant name in the absence of the plant itself, although not necessarily in the absence of the plant product. Plant product identification has already been mentioned as a frequent preliminary learning stage to plant identification on the basis of other features in the cases of common fruits and greens.

e) The child may attribute an incorrect name to a plant and then spontaneously mention a use or function that is correctly associated with the name given but not with the plant. Child No. 11, for example, identified a *pišolnič*, an herbaceous, pithy stemmed plant, as a *čikinib* and then proceeded to say *ya stak' k'atinel* ("it can be burned" i.e. it is good firewood). This observation is quite appropriate for describing the *čikinib*, a kind of oak tree that is very important for firewood, but not at all so for describing the *pišolnič*. Such instances are rare, but they further help to analytically differentiate the perception, the name, and culturally important attributes. In this case, as in d) above, the attribute is more closely tied to the name than the name is to the referent. With such clues it is possible to hypothesize at least three separate storage areas in the brain, for names, for referent attributes, and for percepts, and perhaps a fourth one for concepts corresponding to the percepts. That these can be and usually are interrelated, connected in some way at the appropriate time, is apparent. It appears also that a three or four way connection is not necessary. Connections may be two-way at times and probably at other times there are no connections at all.(c.f. Penfield and Roberts 1959: 230-234). More important from the point of view of learning is the child's acquisition here of a stronger bond between the name and the use than between the name and the objective referent in the plant domain. (See No. 15 on

f) The child may be able to recognize a plant and remark upon its uses without knowing any name for it at all. This is a relatively common occurrence and it is frequently apparent that the child, seeking to please or to show his recognition of the plant, functionally substitutes the use or the property of the plant for the name that he does not know. Three children, for example, when asked to name a *sot čan wamal*, responded with the information that shaking its rattles would cause one's child to cry. This is a common belief associated with the plant. When asked again to name the plant, two of them replied that they did not know the name. The third child invented a name.

Other descriptions substituted for a name, *ya stak' k'atinel*, *ya stak' ?ok'esanel*, *ya stak' tuhk'alte?*, etc., proved also to be correct in the majority of instances. Such descriptions give occasional insights into the stage of a child's life during which they figure in his activities and perhaps when they are learned. The *sakil c'eman*, for example, can be turned into a whistle by pulling out a portion of the stem and pressing on its sides. A glance at the entry *sakil c'eman* in the appendix shows that for children nos. 1, 2, 3, and 4 neither a use nor even a correct generic name was given as a response. Several children from number 5 through number 17 referred to the whistling function of the plant and none of them responded with even a generic name for the plant. The rest of the children, numbers 18 through 23 omitted mention of the whistle function and all knew at least a correct generic for the plant. Since the numbers corresponding to children range in order from 1 to 23 as the ages of the children range in the same ascending order from approximately four years old to approximately thirteen, the numbers 5 through 17 refer to an age range of three years from about five to about 8. One could speculate that before the age of five a child is too young to have had much contact with the plant for it generally doesn't grow near houses, and that after the age of eight the child has begun to lose interest in making whistles from it. During the plant trail task several children did make whistles from the plant. The only ones to do so were within the five to eight age range. Other observations tend to substantiate the speculation that there is a stage in the child's development during which there is an intensified interest in play of this sort.

g) The child may be unable to identify the plant by name and, instead of substituting a use for the name, describes some feature or features of the plant that are part of its morphology or growing habit. Examples of such descriptions are; "?ay ?isim" ("there are hairs"), ?ay šnič ("it has flowers"), čahp yik' ?a ("it has a strange smell"), ?ay ya?lel ("it has juice"), ?ay kili yaši ("it looks green to me"), loḿ šp'ol ("it reproduces very readily"), ?ay ya?benal ("it has leaves"), ha?in k'an ta ya?benal lo?bali ("this looks like banana leaves"), lom šin yik' ("it really smells bad"). A description of this kind is quite different from a use or function description in that for the latter prior knowledge of a kind that cannot be gained by simply looking at the plant on the spot is required, whereas a description of the former type can be given on seeing the plant for the first time. That is to say, a use description, if correct, implies recognition of the plant while a morphological description does not. Responses of this sort are not restricted in occurrence to any particular age group, but their frequency is greater with younger children. Again this mode of response can be seen as the child's attempt to substitute some relevant information for the name that he does not know. Such information can be interpreted as a clue to perceptual attributes of the plant that are salient for the child. The kinds of attributes that are attended vary not only with age but also with the kinds of plants that are represented. More will be said about this later.

It is noteworthy that morphological descriptions play an important role in the actual names of many plants so that the child's use of similar descriptions as a naming substitute appear to be formally anticipatory of such names. One might think that a child, simply by rearranging a description of this sort, could offer a presentable, appropriate, and sometimes even a correct name for a plant. Indeed, the older children frequently do just that. On the other hand metaphor plays such an important part in actual plant nomenclature, yet is so rare in the children's responses, that the possibility of guessing the correct name for a plant is quite small. Where non-metaphorical description determines a plant name some strikingly close guesses may occasionally be noted. For example, the cahal nič wamal was called cahal ničim by child no. 1, cahal wamal by no. 13, ničimetik by no. 6, cahal ničim by no. 17, and cahal wamal by no. 22. cahal nič wamal can be glossed literally as "red flower herb".

h) The child may respond by saying that he has forgotten the name of the plant (č'ay ta ko?tan). It is generally older children that say this, and even then it is rare. It is reasonable here to discount the possibility of lying and assume that such a response means that the child not only recognizes the plant but also knows a name for it, or at one time knew the name. Doubtless in some instances the forgotten name might have been an incorrect one, but in others it would have been quite correct. Plants whose names have been forgotten are generally those that are relatively common and that have a marginal cultural significance (e.g. ščenek' mut, yisim balam).

i) The child may be unable to respond in any fashion other than simply saying "I don't know" (ma hna?, maškil, ma hna?be sba, maškiltik, ma hna? bi sbil, mayuk sbil - all can be glossed 'I don't know' in this context"). The older the child, the more likely he is to make this kind of response rather than assigning the plant to one of the four major plant groups. On the other hand, the older the child, the more likely it is that he will know at least a generic name for the plant. In the younger child a switch from a pattern of supra-generic naming to an "I don't know" response is indicative of fatigue or loss of interest, and usually occurs toward the end of the plant trail.

It is impossible to accurately decide whether or not the child recognizes the plant for which he responds in this manner. Obviously he does in some instances and doesn't in others. Therefore all that is demonstrated is that the child does not know the correct names for the terminal taxa to which the plants belong. Developmentally the interesting thing is the nature of that class of plants that a child of a given age cannot name. Before a certain point in the child's life there are no nameable plants. As the child grows older the plants that he cannot name become fewer, less culturally important, and less frequently encountered. Other factors, to be discussed presently, also affect the ever diminishing list of plants that cannot be named.

j) The child may recognize a plant only as a member of a supra-generic class, designating this class correctly, but be unable to further differentiate this plant from others with a generic, specific, or varietal label. This is exemplified in the following pairs:

c'elel - te?, te? naniš ?a ("tree, tree that's all")
pečeč?ak - ?ak
ha?as wamal - wamal
c'usub - ?ak'
?ihk'uye - č'iš
?ahk?ubal moen - bok

The plant class bok is very rarely used alone to identify a plant and this fact can probably best be explained on the basis of the obvious utility of this class. Apparently a child that has learned to recognize a plant as belonging to the class of "vegetable greens" is very likely to also know at least a generic name for the plant.

When the choice is between giving no response at all or designating a supra-generic class to which a plant belongs, older children tend to pick the former as appropriate while younger children tend towards the latter sort of response. There is also a cross-cutting tendency for boys to respond with "I don't know" where girls would generalize to a supra-generic name.

Even children that tend to avoid supra-generic terms, quite readily do so with the plant class ?ak (grass), a relatively homogeneous group morphologically and one that has a rather limited set of named subclasses, for the most part generics. Even among adults naming variation and confusion is characteristic for many of the kinds of ?ak, although the class itself is rather clearly defined.

k) The child may be able to place the plant correctly into a named generic category but unable to further specify a terminal taxon. With some plants the generic taxon is the terminal taxon. Even when it is not, however, apparently the first reaction of most children who can do so is to give a plant a generic name, regardless of whether or not they know the specific or varietal name. That is, it looks as if the generic name is by far the most salient for almost all plants.

Some of the children unable to specify a plant taxon below the generic level are well aware that the plant can be thus further differentiated, when such is indeed the case. Others apparently are not. The following are examples of generic responses for plants that also belong to lower level taxa:

k'isis tah - *tah*
čahp či - *či*
ščuʔil čenek' - *čenek'*
sera loʔbal - *loʔbal*
petrona waleʔ - *waleʔ*
sakil cahal čiʔin - *čiʔin*

As could be expected, the number of plants that can be specified below the generic level increases with the age of the child. Subject to some qualification, this means that children generally learn the generic name for a plant before specific and varietal names. The qualification is that some of the more common food plants (e.g. *čenek'*, *loʔbal*, *čiʔin*), because they are seen first and named first while the child is still too young to explore the outdoors, may be differented by specific names even before the child has had a chance to firmly associate the plant product with the plant itself in the natural state. Thus, by the time that the association is made, the child may already know the specific name.

1) The child may respond with a correct specific name for a plant that can be further specified as to variety and be unable to give the varietal name. Few plants actually do have varietal names; among those that do are some specific taxa of *čenek'*, *loʔbal*, and *čiʔin*. The plant trail tested the child's ability in this respect only for the *čiʔin*, although three children volunteered the correct varietal name for the kašlan čenek' plant that was demonstrated (One child also volunteered the information that

that there are two varieties of kašlan čenek', sakil and cahal, without specifying which of these applied to the demonstration plant, and another gave the color attributive as yašal which happens not to be one of the varieties of the plant).

m) The child may respond with a supra-generic name that is incorrect. The following are examples of such responses:

karanto (?ak') - wamal
?iw (te?) - wamal
?ac'amte? - wamal
čenek'mut - wamal
cu?um (?ak) - wamal
wet wamal - te?
?ičil ?ak' - te?
sakil c'eman (wamal) - ?ak'

The most frequent mistake is application of the name wamal to a plant that is actually a kind of te?. Less frequent is the use of te? to name a kind of wamal. More rarely the child will call an ?ak' or ?ak a wamal, an ?ak' a te?, or a wamal an ?ak'. The other possible mistake combinations do not occur.

Some of the mistakes appear to have rather transparent causes. The dividing line between te? and wamal is not at all sharp either in terminology or in nature. A number of plants are ambiguously related to one or the other of these two categories. Some other plants belong to the class te? or the class wamal on the basis of an apparently arbitrary convention of nomenclature. On the other hand many members of the te? class, when still seedlings, look like members of the wamal class. Therefore, to correctly name some kinds of seedling te? the child must be able to relate the young specimen to examples of full-grown te?, although this does not imply that the child must necessarily know the generic name. Understandably, the younger the child is, the more likely he is to confuse a young te? with a mature wamal. Some kinds of wamal, such as bahk'al wamal or sakil c'eman, resemble members of the category ?ak'. When one of these is mislabeled ?ak' by a child the cause is what could be considered transparent, and such a mistake indicates the child's reliance on morphological characteristics for placing the plant which in turn points up the level of generalization that he invokes in considering the two plants equivalent in name.

Many of the mistakes as to supra-generic category are not so obviously explained. Doubtless in some cases they represent an indication of the kinds of attributes that the child uses to place a plant in a particular category, but in others it seems as though the class wamal becomes a catch all category answer that will allow a bored or tired child to pass on to the next specimen.

n) The child may respond with a generic name that is in error. The following are examples of such mistakes:

moen č'o - tumat
kak'an - wena
sak bahte? - sak munaste?
we?el buluk' sit - yakan k'ulub wamal
?iw - ?on
makum - sahalum
?eč' - ?ek'
?onte' - ?on
karanato - yal ?iw
tuhk'ulum č'iš - čikč'iš
yatc'i? wamal - bot'?at wamal
kašlan pata - manko
sakaton - sakil ton
šmal waš - h?antun wamal

When the child assigns a plant to an incorrect generic taxon, the error itself can often be of value for interpreting plant features that serve to identify a plant for the child. However the incorrect name may exhibit a relationship to the correct name that is not based on morphological characteristics of the plants to which the names refer. Moreover the incorrect generic name need not even belong to the plant lexicon. It might refer to some other domain. It might be a misprounounciation. It might be a nonsense word.

The child designating a moen č'o with the name tumat was pairing plants, both of them belonging to the genus Physalis, that are quite similar morphologically, the major differences being leaf color and fruit size. Functionally, however, the fruits of tumat are edible while those of moen č'o are not. Thus one could infer that the child was ignoring edibility, leaf color, and fruit size in making the identification. Nevertheless he must have been attending the presence of fruit, leaf shape and texture, stem composition, and general plant outline in order to attribute the name tumat to the plant. Attributes connected with fruit size and leaf color cannot have been totally disregarded. Rather, as exhibited on the specimen of moen č'o, they must have fallen within a range of possibilities felt by the child to be acceptable for assignment of the plant to the generic taxon named by the form tumat, and only in this sense can we say that they were ignored. Both of the children making this mistake correctly named the tumat and for this reason we can feel reasonably confident in the assumption that they were extending their criteria for inclusion of plants in that generic taxon rather than simply switching labels. One child qualified such inclusion by coining a specific name to differentiate the *moen* *č'o* from the *tumat* showing that he was aware of differences but that he felt them to be insignificant on the generic level.

Although functionally quite different, there are only very subtle differences morphologically between the *?on* and *?onte?*, both of which are Persia americana in our own botanical nomenclature. Although several children made the mistake of calling the *?onte?* an *?on*, only one child made the reverse mistake, a nine year old. It would be possible to conclude then, that the *?on* is a more salient name than *?onte?*, that it is probably learned earlier, and that it is not until a child has become relatively familiar with both that he can make an error of identification in either direction. Such assumptions are supported by the structure of the names themselves, by similar data configurations regarding other plants, and by unspecified intuitions of my own based on observation.

Child no. 7, a six year old, in naming a specimen of *?on* and a specimen of *?iw*, reversed the labels. This mistake in naming exhibits her ability to differentiate these two varieties of Persia americana, but it also shows that she is confused about which significant attributes go with which generic name. The temporary state of her confusion is shown by the fact that six months later she correctly named the *?on* and called the *?iw* a *cic?on*.

While the above plant pairs are instances of naming mistakes based on strong morphological similarities between pair members, some examples of generic misnaming show a child's perceptual focus to be on some overriding attribute that allows him to ignore morphological differences that might be quite great. Such is the case when, for example, a child calls the makum (a blackberry vine) a sahalum (a tree that has berries similar to blackberries). Similarly, the child misnaming kak'an as wena must have been focusing on the functional similarity (both are spice flavorings for meat) and perhaps the characteristic minty odors of the plants. Attention to a single salient feature can perhaps be invoked as a partial explanation for the fact that two children labeled a sakbahte? as a sak munaste?. The former has a trunk that is partly covered with a white powder, accounting for the descriptive names ("white-front-tree"), but children do not learn the name of this plant as early as that of the sak munaste?, the name of which also implies whiteness characteristic of a tree. Therefore it looks as if the child, seeing the white powder on the sakbahte?, is reminded of the descriptive name for a known tree and, observing that the description seems to fit the sakbahte?, decides to name it sakmunaste? which, having been learned earlier as a plant name, is more salient than sakbahte?, which not even may be in the child's vocabulary yet. A similar explanation may fit the case of a child misnaming tuhk'ulum čiš as čikč'is, in that both plants are similar primarily on the basis of their common attribute, č'iš("spines").

A generic name with a referent unique to the domain of plants may be remembered on the basis of a similarity in sound to a name with a referent in another domain. Thus ?eč (a bromelaid) was called ?ek' ("star") by one child, and sakaton (a Panicetum) was called sakil ton ("white stone") by another child. In both cases the mnemonic device used by the child was inadequately qualified by phonological rules changing the remembered term to the correct form of the plant name.

Correct and incorrect generic forms may be linked semantically rather than phonologically, and not on the basis of plant similarities. Such a linkage is evident in the misnaming of yatc'i? wamal as bot'?at wamal or the misnaming of šmal waš as h?antun wamal. In the latter example a boy's personal name was substituted for that of a girl. Neither of the substituted names is a legitimate plant name.

Of more than passing interest is the misidentification of a plant on the basis of its location. A young karanato growing under the spreading branches of an ?iw which it in no way resembles, was called yal ?iw ("baby ?iw") by an eight year old girl. Here many morphological differences were overlooked in favor of the attribute proximity for naming the plant, and the perceived differences were justified as being due to growth stage.

o) The child may respond with a specific name that is in error. Examples of such responses are the following:

kinya lo?bal - maču lo?bal
k'isis tah - bac'il tah

mokoč tah - mamal tah
bac'il wale? - mancana wale?
bac'il makum - pahal makum
cahal či?in - ?is ?ak' či?in
bac?il c'inte? - cahal c?inte?

Frequently the erroneous specific attributive would be appropriate for another member of the same genus, as with maču lo?bal, bac'il tah, ?is?ak' či?in, and cahal c'inte?. It is not always possible to determine whether the specific name given by the child was due to his not knowing the correct form or whether the attributes of the plant specimen were perceived as fitting into the specific taxon that was named.

More rarely the specific attributive form was invented ad hoc by the child on the basis of features possessed by the plant, as with mamal tah ("ancient pine") and pahal makum ("sour blackberry").

Still more rarely the erroneous specific attributive was drawn from a stock of attributives that could qualify other generic names but not the one in question, as with mancana wale?.

p) The child may recognize a plant as similar to members of a given generic taxon and name the plant accordingly, maintaining a distinction between the generic and the named plant, by qualifying the generic term with k'anta ("almost", "like"). The resemblance of a large Selaginella to a fern prompted one child to respond to the Selaginella with k'anta cib. The same nine year old boy, when asked to name a specimen of cu?um, called it k'anta halal, again an appropriate observation, linking plants by name that exhibit similar morphological features.

One way of looking at the data has been the foregoing; a classification of the types of responses elicited from children for individual plants, with an attempt to explain these differing types of responses and to sift out some of the clues with which they provide us about the development of naming abilities and cognitive processes underlying naming and its development in the domain of plants. It can be seen that children employ different strategies for naming plants and that these depend in part upon the level of botanical differentiation that has been attained by the child, in part upon the particular features of individual plants, and in part upon idiosyncratic cognitive or personality differences between one child and another.

Morphological, functional, and locational features have been seen to influence the classification of a plant, both individually and in combination. Some attributes are more salient than others, and sometimes one attribute will be of overriding importance to the child in naming a plant. Overextension and underextension of a plant name can both be seen as related to plant attributes, and the acquisition of nomenclatural rules apparently can lead to correct as well as incorrect identifications. Some kinds of naming mistakes lead clearly to the inference that taxonomy and nomenclature are separable but interrelated, and that memories of plant names, perceived attributes, conceived attributes, functional properties, and individual plant instances may be independently stored in the brain, to be interconnected at times but not always.

2.5.3. Developmental trends

Another way of looking at the data is to follow each child individually through the whole sequence of plant names given, so as to get a general idea of that child's level of naming behavior and to better be able to interpret any particular response. Still another kind of analysis would be to follow each plant through the sequence of names that were applied to it by the various children in order of their chronological age, noting general trends where age, sex, or some other variables seem to coincide with abilities to name and with kinds of name applied. I propose to make some general observations based on the latter two ways of viewing the data, but without the benefit of a statistical tabulation of various concordances.

Although there are a number of developmental trends observable from following the naming abilities of the children through a sequence of chronological age for the various plants, some of these become partially obscured by factors that are not age determined. Within the limits of his assimilated knowledge and ability, each child has his own preferences in the formulation of plant names, his own unique backlog of past experiences with plants, and a unique set of genetic and social variables that shaped the direction and content of these experiences. Moreover the child's performance is affected by his mood at the moment, his health, and the attention that he devotes to the task at hand. Finally, the difference between the actual plant specimen and an ideal specimen for the child to recognize affects the child's judgment.

The following are some examples of children's individual naming preferences of the kind that must be taken into consideration in the interpretation of age associated tendencies. Child number 13, when asked to further differentiate generic names that she gave, tended strongly to use a preposed color modifier (particularly _sakil_) with the generic. When confronted with a specimen for which she could not think of a generic name, she almost always combined a color term with a supra-generic term that in most cases was appropriate. Thus her plant trail results contain many more color term tokens than any of the other children. Children nos. 2, 4, 10, and 15 were particularly prone to respond with information on plant uses. They did so spontaneously and usually with plants that they could name also. When uses were given by other children there was a tendency to do so instead of giving the plant name rather than additionally. Children nos. 1 and 5, sisters, were more willing than many of the other children to make up plant names, employing a wide range of attributive forms to that end. On the other hand child no. 16, an introverted boy, exhibited the opposite tendency.

Some children significantly exceeded their age-mates in naming ability, while others did more poorly than their age indicated that they should. That this can be accounted for better on the basis of some sort of generalized "intelligence" rather than by postulating varying degrees of interest in flora is indicated by a correlation between plant trail performance and performance on the grammatical imitation task to be discussed in the next chapter, as well as by any judgment that I was able to make from having known the children. The degree of variation in "intelligence" in the absence of what could be considered an adequate sample is the major stumbling block to a significant statistical evaluation of an age performance correlation. It is well known too that chronological age and level of maturation are not connected on an absolute scale from one child to another.

Another reason for performance variations is differential individual exposure to the plant world. The children that went on the plant trail came from different parts of the paraje, and as noted earlier, the paraje contains several different floral subzones. The gardens surrounding houses differ greatly in the number and variety of food and other plants that they contain, and the garden around the child's house is an important part of his lifespace. Different parents have varying amounts of interest in helping their children to learn the names of things. Siblings and other relatives also play a part in the child's exposure to plants and plant names.

The mood and health of the child affects performance on the plant trail. One boy of eight started off by correctly naming three or four common food plants. Confronted with a less common plant to name, he called it wamal and was unable to specify further. Seeing that this was a satisfactory answer, he then proceeded to call the next thirty plants *wamal* regardless of whether or not he knew the correct name. I had a fair idea of the child's actual ability to name plants and so decided to discontinue the fruitless venture. Five year old slus, a bright and friendly little girl named several plants before she started to get coy about answering and finally she refused to name any plants. Child no. 3 got hungry in the middle of the first half of the plant trail and started to give random names without looking at the plants. Consequently, after she had eaten, we had to digress and do some plants over in order to get a more accurate picture of her capabilities. Child no. 12 had an eye disease when he first attempted to go on the plant trail. His attention wandered so much that he was told to return in a couple of weeks. He did, and was able to name plants better than he had the first time.

Several of the plant specimens were not representative of the average adult form of the plant. The *kašlan pata*, a fair sized tree, was represented by a two-foot tall seedling. Some of the children were shown dried remains of *?išim*, *č'um*, and *čahp ?ak*. Many of the fruit bearing plants were not fruiting when they were shown to children. Some important flowering plants, such as the *tusus* and *č'oliw*, were not in flower when some children named them. Although such deviations from ideal specimens could be expected to have a definite influence on the child's apparent naming ability, most of the children showed a remarkable ability to correctly name the non-ideal specimens in spite of the obvious handicap. From this fact could be inferred the early presence in children of of highly flexible cognitive transformations, a point to be discussed later.

Some tentative answers can now be given to the questions posed at the beginning of this chapter. Because this study was conducted on a cross-section basis rather than a longitudinal one, some of the answers have to be given in terms of an idealized child abstracted from the data. The postulation of such a child and the description of his abilities favors the omission of individual characteristics and proceeds from an attempt to consider and evaluate the many factors that influenced the responses given on the plant trail.

The typical child begins to learn plant names at around two years of age while he is still in the stage of producing utterances that consist of single lexical items. The names learned this early are the terms for plant products and it is doubtful that the child could recognize the plant if he saw it, let alone correctly name it. Among the earliest names learned are *lo?bal*, *wale?*, *čenek'*, and *či?in*. By the age of two-and-a-half the child has begun to make the connection between plant name, plant product, and plant tokens that yield the product. Plant specimens of *lo?bal*, *wale?*, some kinds of *čenek*, and perhaps a few others can be recognized wherever they occur. A number of other plant names have entered the vocabulary by this time, on the order of thirty or so. For some of these names the child can only recognize and identify the plant product in the familiar context of the home. For example koesan (root of the čomate?), či?in, and ?išim might be distinguished and names when in the house and separated from the plant, while these plants themselves are not nameable in the wild state. For others of these names the child can recognize and name particular specimens that occur around the house on the basis of location, gross form characteristics, and visible fruit. Still other plants can be given a supra-generic name when brought into the house for eating, but not differentiated into generics even though the child may have some of the generics in his vocabulary. This is the case with some kinds of bok. It is likely that by this time ?ak', te?, ?ak, and wamal have been related to the four major plant classes in addition to other referents that they may have, but this relation rests on a foundation of functions. Thus te? ("tree") may be identified when the child associates a specimen with its capacity to yield te? ("stick, twig, pole"). Grasses will often be called wamal when encountered outdoors due to small size and lack of woody trunk, though a tuft of thatch grass on the roof might be immediately recognized as ?ak. At a guess the child's active vocabulary at this age would typically be around 400 words, comprising some 30 plant names or more, and increasing greatly from day to day.

By the age of four the child's botanical vocabulary includes more than 100 forms. He is almost certain to be able to recognize and name healthy mature specimens of the following generics:

ščekul
kak'an
lo?bal
čenek'

kulante
bat
ha?as
?alčaš
či?in
?išim
sc'ul
tah
tulesna
k'eweš
kahpe
manko
pata
čin?ak'

wena
wale?
?ahate?
č'aal bok
č'omate?
c'um
ša?ib
mumum
pirimahk'
halal
kok
c'inte?
c?tuluk'
hihtě?

This is not to say that he will apply the appropriate generic term to all of the specifics that it includes, nor that he will not wrongly apply one of these generic names to members of other generic taxa. A *lima* is likely to be misnamed *?alčaš* if it is not in fruit, for then the sweet lime is very similar to the orange but for its lighter, slightly larger leaves. Likewise the *mayil* is likely to be given the name *č'um*. The child may include both *lima* and *mayil* in his plant vocabulary, but he has not yet "learned" the morphological attributes other than the fruits that distinguish a *lima* from a *?alčaš* or a *mayil* from a *č'um*. The relative salience of *?alčaš* and *č'um* account for the fact that the child would not be likely to call a specimen of one of these a *lima* or *mayil*. The greater salience of the former terms is no doubt due to their greater importance as food items.

By four the child can recognize and name the above generics and is also able to speak of their uses, appropriately supplying the correct form of the verb "to eat" in most instances. He can say that *halal* (bamboo) is used to collect oranges and that *hihte?* (oak) is for burning. He is likely to know too that one kind of *čin?ak'*, a common but not very useful vine, is supposed to rot the ears of one who plays with it.

For plants that he cannot name generically the child can by now generally designate an appropriate supra-generic term, though he may occasionally call an *?ak*, *?ak'*, or *te?* a *wamal* or call a *wamal* or *?ak'* a *te?* for he has not yet completely assimilated the attributes of each class that are criterial at this level. Frequently he will attempt to generically name a plant that is new to him by preposing one of the supra-generics with an adjectival modifier that is often appropriate if wrong. If he is pressed to further specify a generic that he knows, he may also prepose an adjective modifier, this time to the generic name. For *lo?bal*, *čenek'*, *či?in*, and perhaps a few others the child will have already learned the names of one or more specifics, but he is very erratic in their application, being wrong more often than not, particularly when dealing with kinds of *lo?bal*.

At this age the child still depends relatively heavily on location or context for naming many plants, and he is not yet able to accurately take into account the full variety of forms and growth stages exhibited by a single kind of plant although he is at this time distinctly aware of such possibilities. Hence *šč'uč'il ha?ben* was named *lo?bal* and *?ahoh* was called *tutin k'eweš* ("baby k'eweš") by child no. 1.

By the age of five or six the child has added a number of new plant names to his vocabulary, many generics and some specifics. He is beginning to distinguish more or less accurately *lima* from *ʔalčaš*, *pahčiak'* from *pata*, *ʔiw* from *ʔon*, *c'elel* from *kok*, *tim* from *či*, and *č'oliw* from *pirimahk'*. He is getting relatively good at identifying most of the more common wild greens with generic names, though he still might confuse *moen* and *moen č'o*. He is better than the four year old at assigning supra-generic labels.

The six year old has learned to recognize and name several of the more common plant generics that are of no particular use culturally, and is beginning to accurately distinguish several specifics of some of the more important genera such as *loʔbal*, *čenek'*, *čiʔin*, etc. by name. This implies that a greater number of morphological attributes are becoming meaningful to him.

He has learned to recognize several medicinal plants and tends to extend a nomenclatural rule for some such plants to cover those that have other legitimate names (see name type 14). He is beginning to differentiate grasses generically, using generic names that he has learned, but often applying them to members of the wrong generic taxa.

The six year old can generically name a good number of useful plants that are not to be found near his house. He spends much of his time outdoors and in the company of other children, picking fruit, climbing trees, making whistles from plant stems, actively exploring the natural world around him. In doing so he familiarizes himself with many of the details of plant morphology, making it all the easier to differentiate specifics and to get a general idea of the wide variety of plants that exist. He sees too the variety of possible manifestations for a particular plant form and hence is less likely than a four year old to misname a seedling specimen of a plant that he could identify in the mature state.

By the age of eight or nine the child is able to more or less consistently identify many more plants than he could earlier. He is likely to correctly name the following:

paka?
č'ič' bat
bac'il wale?
tahtam
?ac'amte?
cuy
?ahoh
bac'il tah
sahalum
c'eman
cop
sibal ?ak
kinya lo?bal
ca?ak
mumunte?
kašlan pata
sot čan
č'ič' ni?
tuš?ak
cacames
sakbahte?
k'an č'iš
cib
čikč'iš
čenek' mut
č'opak
mol
sun
c'usub
?eč'
tok'oy
kuliš ?ek'
mayil

kelem tusus
šču?il čenek'
?ahk'ubal moen
conte?
pošil ši?wel
balank'in
sak manaste?
yehk'eč šuš
cic
sabal c'unun
?uhkum
tuhk'ulum č'iš
yihk'acte?
hot'ben cawen
kašlan kulantu
?ihk'uye
nohk'oš ?ak'
sakil čin?ak'
bankilal
k'isis tah
h?antun kerem
maču lo?bal
sitit
tuht
tunim čih wamal
šbohtil čenek'
bac'il makum
šč'uč'il ha?ben
takin č'iel
č'išitah
čiilte?
pimil c'eman
bac'il k'ante?

skulantu čitam
yisim balam
yakan k'ulub wamal
šmal waš
kampana ničim

?onte?
č'iht
kašlan lima
k'am?ak'

Type 11 and type 12 names begin to appear at this age and the child is able to correctly identify a fair number of non-useful plants, and it is around this time that boys begin to outstrip girls in ability to name such non-useful plants.

Specific names are given more frequently by the nine year old than by the six year old, and by the age of nine the child has a tendency to say that he doesn't know the name of a plant rather than simply give a major plant class label. The nine year old needs fewer contextual (non-morphological) clues to identify plants than does the six year old. He can also name some plants not found in his paraje. By this age he takes edibility in a plant for granted and is apparently more concerned with learning the names of plants that have curative powers, giving them legitimate names rather than inventing type 14 names.

By the age of twelve the child has learned to correctly identify many more specific taxa, relying on much subtler characteristics than were needed to discriminate generics. He can often point out particular morphological features that he uses to specify plants. He rarely mistakes a plant specimen in one growth stage for another in another stage. He has a large stock of subsidiary information pertaining to a large number of plants; information about uses, dangers, method of preparation, habitat, etc. While the six year old can recognize and name a ca?tuluk tree and also indicate that it bears edible fruit, the twelve year old is able to additionally point out that the unripe fruit can be mashed and thrown in a river to stupefy fish for catching, that the tree will grow to a particular height relative to other trees, that it bears fruit toward the end of the rainy season, and so on.

The twelve year old boy can correctly name more plant taxa than can a girl of the same age. Those plants within the paraje that he cannot name correctly are those about which adults will disagree or be unable to name as well in most cases. This does not mean that the child stops learning about plants at the age of twelve. It would be more accurate to say that the "average" twelve year old of either sex can correctly name about as many plants as the "below-average" adult of the same sex.

2.6. Conclusion

To summarize, the child's plant naming abilities begin in the house and in a general way expand outward to the garden then to the surrounding bush and farther from home as the child grows older. That is, the closer to home that the plant is, the more probable that it can be named correctly. Running counter to this trend at times is another generalized developmental sequence: The child's naming abilities begin with culturally important plants, particularly food plants, and expand to include less important plants and then some culturally irrelevant plants. In other words, the more culturally important the plant, the more probable that the name of the terminal taxon to which it belongs can be given.

With an increase in age comes an increase in the child's capacity to recognize the many and varied manifestations of a particular plant taxon. Such attribute dimensions as location, growth stage, health of the plant, and other contextual variables are taken into ever increasing account by the developing child in assigning a plant to a taxonomic category, resulting in increased accuracy and exhaustiveness of inclusion. Increasing age also brings an increase in the number of perceived morphological plant attributes that can be distinguished. Some of these are criterial for taxonomic inclusion at specified levels and others are not. Too, with increasing age comes an expansion of the individual's repertoire of cultural information (functional attributes) relating to plants. A continually enlarging cluster of associations forms in the child's mind around the verbal tag and/or the concept of a particular plant taxon. In other words more information is learned more correctly in the developmental sequence.

The data present a picture of age-linked increasing nomenclatural specification in the child, the learning of progressively lower level labels for plant taxa. In a very general sense this is the case, but this view of a unilineal unfolding of categories must be qualified to adequately describe the order of acquisition of lexical labels for plants and plant categories. In the first place such acquisition is the result of multiple and interacting cognitive processes. Secondly a distinction must be made between the acquisition of a botanical name and the acquisition of the ability to correctly apply that name to every plant example fitting into the named category without applying it to any examples that do not. This distinction is only partially implicit in the plant trail procedure. Thirdly, different plants have differing degrees of cultural utility and differing degrees of relevance for the child. Since these factors play a large part in determining the way in which a plant is named for a child, along with other contextual variables, the child cannot possibly acquire plant names in the apparently ideal sequence, beginning with the unique beginner te?ak' then working down through progressively subordinate taxonomic levels to varietal names. It appears that in actual practice the child begins his acquisition of botanical nomenclature by learning generic names for some plants simultaneously with supra-generic names for other plants. Then as he is learning specific names that differentiate the generics he he is also learning generic names that differentiate the supra-generics. It is in this light that we can state that the bulk of the child's first learned plant names are generic names and that from this starting point he continues to differentiate nomenclaturally while cognitively he continues to differentiate and generalize plants simultaneously.

3. ELICITED IMITATIONS

3.1. Theoretical background

When the child begins to string words together in a regular and appropriate way, we can say that he is learning grammar. One way of looking at this grammar is to focus on the multi-word utterances produced by the child, positing from regularities in word and morpheme sequences that there are rules or habit patterns underlying these regularities that have been internalized by the child. Because of the number of possible sentences employing different words amd morphemes it is not economical to look for regularities in the ordering of individual words. Instead we can create classes of words, the members of each class sharing certain privileges of occurrence with respect to other words in the utterance and also sharing significant semantic features on a relevant level of contrast. It is possible to ignore the semantic aspect of class membership in order to arrive at a grammar on purely distributional grounds but doing so would severely limit the value of the grammar to the study of its acquisition.

One of the innovations of modern Transformational-Generative linguistic theory has been a discounting of the importance of discovery procedure for grammars in a theory of language. This change in the goals of linguistics is quite reasonable from a meta-theoretical point of view and has been well argued by Chomsky (1957:52), but the student of language acquisition by children must necessarily be concerned with discovery procedure for one of the aims of such study is to understand the process by which a child discovers the grammatical patterns that are employed by the adults in his speech community. On the surface it may appear that the term "discovery procedure" is being used here to refer to two quite different things for the "grammar" discovered by the child is not necessarily the same as the "grammar" described by the linguist. Where the linguist's grammatical model is judged by principles of simplicity, completeness, and elegance, the child's model is judged only indirectly, by his ability to speak correctly as judged by members of his speech community. However it is important to recognize that for the study of language acquisition the linguists model of a grammar is only relevant to the extent that it approximates the "psychologically real" model of what is presumed to be a native speaker's competence, existing in some form in the human mind. If this is so, then it is possible to say that a completely relevant linguist's grammar will be the same as the "psychologically real" grammar that is ultimately discovered by the child learning to speak. Hence, although discovery procedure has no necessary connection to the correctness and adequacy of the completely relevant linguist's grammatical competence model, the procedure by which the child discovers the rules that comprise his own ultimate competence is clearly one of the procedures, though not necessarily the only one, that could be used by the linguist to discover that competence.

In any case, although it is not yet absolutely clear what sort of a grammar is discovered by the growing child, it is relatively certain that he does arrive at some sort of unconscious grammatical model and that this model is arrived at by the discovery and internalization of grammatical rules. Thus "discovery procedure" is an important concern of the developmental psycholinguist. To replace discovery procedure as a valid concern is to admit the importance of the semantic dimension for the discovery and explanation of underlying grammatical regularities for it is quite apparent that children do not do a formal distributional analysis of their speech input in arriving at their successive approximations of adult grammatical patterns. In fact children are not in a position to be able to ignore the semantic dimension even if they wanted to. Even linguists have always relied heavily on meaning to arrive at their grammars, though it is often claimed that this goes no further than the use of the same-or-different test in making class assignment decisions. The point of this digression has been to stress the semantic aspect of grammatical class membership and to affirm the basic importance of discovery procedure to language acquisition studies.

As the child grows older he discovers the ways by which he can replace words with phrases, clauses, and even sentences, within an utterance, augmenting, qualifying, and changing the meaning at will. He learns to add and subtract units in an utterance and to order and reorder them appropriately. He learns to substitute one unit for another on the basis of abstract class membership. He also learns to process an utterance that he hears, interpreting the structural units so as to comprehend its meaning. In short, he is developing a grammar that will serve him both comprehension and production.

Comprehension and production, more commonly known as understanding and speaking, constitute linguistic performance. These are the ways in which a speaker-hearer uses language. They are affected by a number of variables, such as attention, memory, immediate recall, distractions, motor abilities, hearing abilities, expectancy sets, judgments of acceptability and appropriateness, and emotional state, as well as by internalized rules of utterance formation. All but the last of these variables are irrelevant to linguistic competence, the speaker-hearer's knowledge of his language. Competence is to performance as language is to speech. That is, competence and language are both abstractions created by the linguist to limit his scope of enquiry and to provide an analytical framework with which to work. In other words, they are idealized concepts applying to theoretical systems. Competence is often conceptualized in more concrete terms as a listing of rules relating a semantic stratum to a phonological stratum or as a set of rewrite rules relating deep structure to surface structure. In another vein competence refers to what the language user could do if it were not for the limitations imposed by the above mentioned variables and others, but which in practice he only approximates in varying degrees by his performance.

It follows that linguistic competence must be inferred for it cannot be measured directly. Performance however can be studied directly, and from such a study and observations of performance we can begin to make inferences about the underlying competence. Therefore I believe that construction of an adequate model of performance must precede an adequate competence model. We do not yet know what all the variables affecting language use are, nor do we know their relative values and importance. How then can we expect to bypass them in inferring language competence?

A number of techniques have been developed for investigating aspects of the acquisition of grammar. One of these, elicited imitations of model sentences by children, promises to be very revealing of some of the processes involved in language performance, both developmentally and otherwise. In addition its application is not limited to a restricted range of societies through procedural difficulties or cultural biases introduced by fixed modes of analysis.

3.2. Previous uses of elicited imitations

3.2.1. Introductory

It is well known that the speech of very young children lacks many of the inflections and function words that are characteristic of adult speech, often bearing a strong resemblance to the abbreviated wording to be found in telegrams. That the analogy is purely heuristic can be seen quite readily on further scrutiny.

The telegram represents a conscious attempt to reduce the redundancy that is present in the message form by a judicious removal of functors, pronouns, and some other content words. Inflections are usually spared at the expense of pronouns in contrast with the "telegraphic speech" of young children which represents not a conscious removal of words and simplification of sentence construction, but rather a lack of the ability to add the complexity and redundancy that is normally present in adult speech.

This "telegraphic" character of child speech can be seen not only when the child verbalizes his own thoughts, but also when he imitates adult utterances whether spontaneously or on request. In fact it is most apparent in the child's imitations because here we have model sentence with which to compare the structure of the imitation. In addition to noting the differences between the model sentence and the child's imitation of it, we can postulate that such differences have non-random causes that, if properly identified by the investigator, can provide clues to the nature of the linguistic processing that takes place in the child's brain. This processing can be thought of as taking place in two steps: the decoding of the model sentence and then the encoding for production of the resultant imitation. Exactly how this is done and the nature of the units involved is one of the central concerns of a theory of performance. One way of attacking this problem is to isolate the factors that affect sentence processing and then to determine the nature and importance of these factors.

If encoding and decoding are similar processes in children and adults, then age-related differences in the ability of children to reproduce a model sentence correctly would indicate that much of language development consists of increases in vocabulary, memory, attention span, and so on. On the other hand the basic processes may be different in children and adults. In either case such factors are influential in language acquisition for they do affect speech processing and therefore belong in any model of language performance.

Because with imitations we know what goes in and what comes out, there is no need to make inferences about the nature of the sentence that the child would have given had he been able. The model sentence is that sentence. It is easy to see the utility of approaching the construction of performance models through the use of sentence imitations, and to recognize the importance of determining a child's intent for comparison with his production. It would be inefficient, however, to wait for the child to produce spontaneous imitations of all possible sentences or even of an adequate sampling of sentence types. Consequently the purposeful elicitation of imitations from children is an attempt to avoid such inefficiency. Model sentences can be constructed to sample any types desired.

3.2.2. Brown and Fraser

Imitation tests have been given to English speaking children during the past several years. The following passage summarizes generalizations made by American psycholinguists on the basis of some of the earliest in-depth analyses of elicited imitations:

> With increasing age, children produce more imitations that are morphemically identical with the original. With increasing age, the imitative utterances produced include larger numbers of morphemes--approaching the numbers in the model sentences. The morphemes produced are invariably in their original order. Omissions do not appear to be random or idiosyncratic. On the contrary, it looks as if, across children and across sentences, there is a consistent tendency to retain onekind of morpheme and drop another kind. The two sorts of morphemes contrast on several correlated dimensions. The morphemes most likely to be retained are: morphemes that occur in final position in the sentence; morphemes that are reference-making forms; morphemes that belong mainly to the large and expandable noun, verb, and adjective parts-of-speech; morphemes that are relatively unpredictable from the context; and morphemes that receive the heavier stresses in ordinary English pronunciation. The morphemes least likely to be retained are: morphemes that occur in intermediate positions in the sentence; morphemes that are not reference making forms; morphemes that belong to such small-sized grammatical categories as the articles, modal auxiliaries, and inflections; morphemes that are relatively predictable from context and so carry little information; and morphemes that receive the weaker stresses in ordinary English pronunciation (Brown and Fraser 1964:75-76).

Later studies suggest that this is an oversimplified view. Imitations are very often not simply the model sentence minus certain unstressed unimportant morphemes. Omissions do frequently occur, but so do additions, substitutions, and various kinds of rearrangements, as will be demonstrated later. And all of these changes from the original can involve units that may be larger or smaller than the morpheme. That is, such changes may be on the phonetic, morphological, lexical, phrasal, clausal, and even the sentential level. Imitations frequently differ from the model sentence by their inclusion of hesitations and false starts as well. These too, give valuable clues about sentence processing by the child and deserve detailed attention in the study of imitations.

3.2.3. Sentence length and structural complexity

The length of the model sentence is only one of the determinants for predicting the accuracy with which it will be imitated. This determinant interacts with others such as structural complexity, attention span of the child, interference of previously established sets, etc. so that if the others are allowed to vary, no single one of these is a critical constant for accurate reproduction. Once it had been recognized that sentence length was not critical, structural complexity was then viewed as of paramount importance.

Structural complexity in a sentence is difficult to measure in the absence of an acceptable competence model that includes some definition of complexity. It has nevertheless been viewed by as measureable from the number of grammatical transformations needed to arrive at the surface structure. Brogan, however, has suggested that short term memory limitations impose a structural complexity on internal embeddings that cannot be accounted for simply on the basis of the transformational history of the sentence (1968). Smith, on the other hand, focuses on the semantic aspect when she classifies sentences into groups of low compression and high compression (1966). Sentences having low compression distribute semantic information relatively evenly throughout the sentence. Those with high compression show bunching or clustering of semantic information at the nonphrase or verbphrase level. Degree of compression can be related indirectly to structural complexity, and children were found to have much more difficulty in imitating sentences of high compression. An adequate account of structural complexity would greatly facilitate efforts to explain the nature of imitation, but until one is forthcoming we will have to infer complexity largely from performance, assuming that the growth of linguistic abilities includes an increase in the ability to handle such structural complexity.

3.2.4. Slobin and Welsh

Recently Slobin and Welsh undertook a longitudinal study of the imitations of a two year old English speaking child in order to assess the value of elicited imitations as a research tool for the discovery of the child's underlying linguistic competence. In addition to concluding that the "classical" view of imitations represented by the above quotation from Brown and Fraser is in need of modification, and that "sentence recognition and imitation are filtered through the individual's productive linguistic system", they present a number of intriguing hints about the nature of mental processes that go into the decoding and encoding of sentences in imitation. Referring to their subject they say:

> Emphasis can lead her to repeat words she would normally omit from imitation, but she generally

> ignores repeated words in imitating model sentences.
>
> If she comprehends a sentence, she need not repeat it in the order given. Reordering can also take place as a result of imposing SVO [subject-verb-object] constructions upon model sentences.
>
> The process of sentence recognition includes retrieval of both form and content. Syntactic structures take up space in memory, and frequently content will be sacrificed to the retention of form in immediate, rote imitation. On the other hand, if content has been retrieved and stored, it may be encoded in the child's own syntax in imitation. (Slobin and Welsh 1968:17)

Examples of imitations noted by Slobin and Welsh demonstrate, among other things: stress shifted in position; repeated word in model ignored in imitation; word repetition recoded as stress in imitation; word substituted in imitation for another of same syntactic class; propositions inverted in conjoined sentences; conjunction added to conjoin two sentences; conjunction deleted to form two sentences from one; second noun phrase pronominalized in conjoined sentences. Such examples give an idea of the variety of changes that a child can make when trying to repeat a model sentence. They also provide a base for comparison with imitations elicited from children speaking other languages.

3.3. Elicited imitations in Tenejapa

3.3.1. Aims

One of the aims in administering the imitation test to Tzeltal children was to discover some of the ways that these children would change the models when imitating them in order to see whether similar kinds of additions, deletions, substitutions, and rearrangements occur in both English and in a language of quite different structure. As will be seen, there are great similarities between the ways that Tzeltal children and English speaking children alter model sentences in imitation. Evidently the processes involved are on a cognitive level that transcends linguistic form. Another of the goals of this study was to add to existing knowledge about the kinds of imitation mistakes that children can make, on the assumption that enumeration and explanation of all such potential mistakes could constitute a significant step toward the building of a model of linguistic performance. Imitation mistakes provide clues to the nature of speech processing, and the way that the mind processes linguistic data is the key to the nature and relations of language units. Finally, it was hoped that the technique of elicited imitations would cast some light on the process of language acquisition by Tzeltal children through correlations between age and kinds of deviations from model sentences in imitation.

3.3.2. Procedure

My first task was to construct a set of model sentences varying with regard to grammatical form, stress and intonation patterns, and length (ranging from two to nine words). Major sentence types were included (e.g. affirmative, negative, imperative, yes/no questions, why questions, coordinated sentences, embebbings, etc.), and major grammatical categories were sampled (e.g. tense, mood, aspect, person, number, etc.), Three sentences thought to be ungrammatical were included. One, a negative command with included tense particle, was found to be structurally deviant, but still grammatical. Another, in which an adjective was repeated, turned out to be simply a grammatically correct sentence with the adjective intensified. The third, in which there was a reiterated preposition, was in fact ungrammatical.

Many of the model sentences were selected from examples of phrase and clause types given in Kaufman's sketch of Tenejapa Tzeltal syntax (1961). Others came from Berlin's additional notes on Tenejapa syntax (1962). Still others were gleaned from conversations overheard between parents and children. In all fifty-four model sentences were used. They were arranged in a particular order only to the extent that the first few were short and simple, the last few were relatively long and complex, and the intervening ones were long and short interspersed. The point of the simple sentences in the beginning was to gently ease the child into performing a task that would not seem beyond his capacities from the start. The most difficult sentences were placed at the end so that the child would not get frustrated and quit in the middle of the task. This arrangement proved to be quite satisfactory.

Once the list of model sentences had been established it remained only to administer the task to a number of children at monthly intervals. The first few tries ended in failure so the administration procedure had to be revised, and this is why. At first I would go to visit a child at his house, bringing tape recorder, assistant, candy, and the list of model sentences. With the candy as inducement, I had hoped that my assistant could explain the task to the child, read off the sentences one by one, and have the child attempt to imitate the models as I operated the tape recorder. It turned out that my assistant, a native speaker of Tzeltal, read the model sentences differently each time, with frequent false starts and hesitations, and usually without an intonation that would indicate his comprehension of what he was reading. In addition, recording conditions at the child's were usually bad because of wind noise, children playing nearby, adults stirring up the fire, and so on. Clearly a new procedure was needed, so I decided to make a master recording of the model sentences by having my assistant read and practice each one until he could do it perfectly and then recording them one at a time. One well spent day accomplished this; then children were invited to my house to hear and imitate the master tape.

First the child was asked to come and sit on a low stool near the center of the one room house. Next to him sat my assistant while before him a directional microphone rested on a pad on top of a low table aimed at the child's mouth. Strapped to the wall behind the microphone was a good quality speaker fed by the tape recorder with the master tape of imitation models. Once the child understood that he would receive a piece of candy and some money upon completion of the imitation test, and that he was supposed to copy each sentence after he had heard the whole of it, I started playing the model sentences through the speaker with one recorder and recording from the microphone in front of the child with the other recorder. After each model sentence the master tape was shut off while the child imitated it. In this manner all fifty-four sentences could be completed in from ten to fifteen minutes. Because each child heard the identically pronounced model sentences a measure of control was gained over the linguistic input that far outweighed any possible distractions resulting from a mechanical rather than a human speaker. Moreover, such distractions, if they existed, were the same for every child.

Three factors influenced the choice of a stand held directional microphone over an omnidirectional lavalier microphone. First, children tended to play with the cord of the lavalier during experimental sessions and complained that the microphone was heavy. Second, the frontal directional microphone picked up aspiration and glottalized consonants more clearly because of its positioning. Third, the lavalier received the model sentence and its imitation equally well, a source of confusion in transcription of the data.

Children responded to the imitation test in several different ways. Some were shy and hesitant about repeating anything, particularly at first, whereas others ran through the test quite confidently. Some were afraid, their fear turning into fidgeting as the test proceeded. A few children were so afraid that gentle persuasion elicited only crying, so they never did take the test.

Some noisy recordings resulted from fidgeting and foot movements of younger children. A few children were able to complete the imitations only after brief intermissions for candy eating. By and large, however, the results were good, producing clear tapes that were relatively easy to transcribe.

Thirty-six children took the imitation test, ranging in age from about three to about thirteen. The ages given are only approximate for parents can rarely estimate a child's age reliably. A parent's first response upon being asked the age of a child is that they don't know. When pressed they will give an age in years if the child is older than three or four. If the child is younger than three the parents can often be more specific and accurate for they tend to remember the birth of the child in relation to an important social event that was going on around that time, such as Todos Santos or Carnaval. Where I have noted an age range for a particular child (e.g. 8-10), the lower figure is the parent's estimate and the higher is my own top estimate. The child is more likely to be midway between the two estimates. Nineteen of the thirty-six children taking the imitation test also did the plant trail.

The imitation test was designed for children between the ages of two-and-a-half and five, and the attempt was made to get monthly samples from each child. As it happened children younger than three or four simply could not be persuaded to do the imitations no matter what the reward, so the age range was extended upwards. Monthly samples also proved most difficult to obtain.

Some children never came back after the first session. Others waited two or more months before returning to take the test again. Two of the children died after their first session. Thus not all of the children taking the imitation test one month were around the next month. As a consequence new children had to be added to the list. Each month some new children came to take the test. In the end this may have been fortunate, for more children were tested than otherwise would have been. Also a review of the results shows that those children taking the imitation test more than once did not develop an increasing capacity for handling difficult syntactic patterns during the intervening time to the extent that changes in the imitations could be definitely attributed to learning.

A few of the children were retested on the same day or the next. This was done so as to get some idea of the variability in the imitations elicited from the same child at roughly the same time in order to compare such variability with that coming from the expected progress made by other children through time. The potential role of a practice factor cannot be eliminated in explaining an apparently unstable response, however. The importance of practice for imitations will have to be explored in detail in the future. From American children there appears to be scattered evidence in anecdotal form that a child's repetition is remarkably impervious to major changes on successive repetitions (McNiell 1966:69). Ervin's findings, that children's imitations are not

Ervin's findings that children's imitations are not grammatically progressive (i.e. more advanced syntactically than free speech of the same child at the same age), is suggestive on this point also (Ervin 1964:170). That is to say, it is likely that the instability in successive imitations is not due to learning of new grammatical patterns. The role of overt imitation practice in language acquisition is, however, still the subject of controversy (c.f. Slobin 1967).

3.4. Classification of response types

3.4.1. Reproduction of model sentences

From the analytical point of view taken here there are two kinds of imitations; those which are exact reproductions of model sentences, and those which are not. Exact reproductions are those imitations that contain all and only the same phonemes represented in the model sentence and in the same order. Exact reproductions give us no information about sentence processing mechanisms beyond simply demonstrating that a child at a given age or stage of language development is able to correctly process a particular sentence or perhaps a particular sentence structure. That is, we cannot say what units are being encoded and decoded nor can we infer how this is done. It is true that with relatively long sentences, phonemic units can in all probability be ruled out as the highest level of material encoding, but this still does not indicate what the most probable units might be.

A reproduction of a model sentence that is not exact can be said to contain mistakes. Mistakes in elicited imitations then, are deviations from exact reproduction of model sentences, regardless of whether or not the imitation itself is grammatically correct. A mistake could be a hesitation, a false start, misplaced stress, or a phonemically different intonation contour, as well as an omission, addition, substitution, or reordering of a segmental phoneme, a morpheme, a lexeme, a phrase, a clause, or a sentence. From such mistakes it is possible to infer units of cognitive processing and even to speculate on the nature of such processing. Moreover it is possible to form hypotheses about distracting factors (kinds of processing interference) and the relative salience of particular structural elements. And finally, it is possible too to correlate types of mistakes with language development in terms of age or stage.

Stress, rhythm, and intonation tend to be preserved in imitation to a high degree, and these aspects are among the first and best imitated by children. This is apparent with both Tzeltal and English speaking children (c.f. Slobin and Welsh 1968:5). The Tzeltal children studied were beyond the age of making significant mistakes of this kind. For them mistakes in these suprasegmental aspects of sentence structure are biproducts of other kinds of mistakes. For this reason they will be mentioned incidentally rather than discussed separately.

3.4.2. Addition of material in imitation

An addition may enter into the repetition of a model sentence on the phonological level. The following example illustrates such an addition. (The model sentence is given first, preceded by an M and followed by the number of the sentence as catalogued in appendix D. The child's imitation is given immediately below, preceded by an I and followed by the number assigned to the child in Table IV).

(1) M yip ʔa ke čahp htebuk ʔa 50
I yip ʔa ke čah..p htekbuk ʔa 16

In this case the insertion of the extra /k/ in the penultimate word was apparently an anticipation of the final /k/ in that word, perhaps caused by an attempt to compensate for the preceding hesitation pause which changed the rhythmic structure of the sentence. (A hesitation pause followed by continuation of the sentence is represented as .. in the examples. A hesitation pause followed by a return to an earlier part of the sentence, indicating acknowledgment of a false start that must be figuratively erased, is represented as ... in the examples).

A phonemic addition with a different explanation is presented in the following example.

(2) M la stikun ta leel 20
I la štikun ta lehel 2

Here an /h/ is inserted between the vowels of leel, a verbal noun form consisting of the transitive verb roote le ("search") and the verbal noun forming affix -el. There are several monosyllabic noun and verb roots that add an /h/ when combined with the first person plural suffix *-tik* which for nouns is the possessor. For example *ke* ("my mouth") becomes *kehtik* ("our mouth"), *hna* ("my house") becomes *hnahtik* ("our house"), and *ya hle* ("I search") becomes *ya hlehtik* ("we search"). The child may have generalized from such processes, operating from a rule adding /h/ to these roots before any suffix. Or the child may assume that the verb root in this case is *leh* rather than *le*. Either way the result is incorrect.

A phoneme may be added that is not linguistically incorrect, but simply an optional sound in a particular context. That is some morphological alternates exist in apparently free variation, differing by inclusion or exclusion of only one phoneme. See, for example, the following imitation.

(3) M ya hle hpošil te mač'a ya snaʔ poštael 52
I ya hle hpošil te mač'a ya snaʔ poštayel 33

In the Tenejapa dialect of Tzeltal the transitivizing suffix *-ta* may optionally become *-tay* when followed by an /e/ though individual idiolects may contain preferences for one form over the other. (The *-tay* form is obligatory when followed by an /e/ in the Aguacatenango dialect of Tzeltal.) Just such a preference appears in this example.

Additional material may enter into an imitation on the morphological level, as in the following:

(4) M ya hle hpošil te mač'a ya snaʔ poštael 52
I ya hnaʔ hpošil te mač'a ya snaʔ špoštael 29

Here a third person possessive inflection is prefixed to the verbal noun *poštael* ("curing") in the imitation. The resulting form, *špоštael* ("his curing") is grammatically correct and does not significantly change the meaning of the sentence.

Younger children are liable to affix morphemes that are inappropriate to the stem class and therefore are ungrammatical. The following is an example.

(5) M me sik me k'išin 1
I me hk'išin 1

This child, besides leaving out one of the two coordinated clauses, added a first person prefix { h }, appropriate only to transitive verbs, to the stative verb *k'išin*. Although no explanation is apparent for the incorrect insertion of this person marker, there are cases in which some causative factor may be surmised. For example:

(6) M ha? ča?tul č'in č'in kerem 48
I ha? ča?ča?..tul.. č'in č'in kerem 36

In this case an older child has added an extra numeral prefix to the numeral classifier *tul* by reduplicating the one that was already there. It will be noticed that the adjective *č'in* is reiterated in the model sentence, and apparently the child overextended some sort of ad hoc reduplication rule based upon the perceived double adjective to apply to both of the noun modifiers in the sentence. Such evidence suggests the non-unitary nature of the adjective compound *č'in č'in* as it is filtered through this child's productive system. Interestingly enough, this is not just an isolated case. Incorrect reduplication and partial reduplications are common in the sample of imitations of this model sentence, and these most often involve the numeral prefix { ča- }. From the limited sample it appears that children of six and older are more susceptible to this kind of mistake than are younger ones.

Some children incorrectly attach one inflection to another as in the following example.

(7) M ya šʔak'bet yuč' yuʔun 16
I ya šʔak'bet šyuč' yuʔun 2

In this passive sentence the child has prefixed *yuč'* ("he drinks") with a morpheme { š } that could be either third person possessive or incompletive aspect. If the child meant it to be the latter, then she probably overextended an ad hoc rule or instruction to prefix the verb with an aspect marker, applying it to both verbs. On the other hand the child may have found it difficult to reproduce two verbs in immediate constituency and so attempted to make the second verb into a possessed noun ignoring the already present person marker { y }. She could have created an appropriate possessed noun by simply suffixing *yuč'* with *-bal* but this would have upset the rhythm of the sentence. It is difficult to favor either one of the possible explanations without further evidence.

Although unusual with its reiterated adjective, the model sentence in example (6) is not ungrammatical. The following example includes an ungrammatical model sentence for it has a reiterated preposition *ta*.

(8) M mutetik ʔay ta ta hamalal 54
I mutetik ʔay ta ta ta ta.. hamalal 4

Here the addition of material on the lexical level is illustrated. The reiterated preposition of the model influences no other change in the sentence, but causes the addition of two or more prepositions and a hesitation pause in the imitation. It seems as if the child, when decoding the model sentence, noticed that the preposition ta occurred more than once in sequence and then gave himself instructions to encode the sentence in such a way as to produce a number of prepositions in series until it sounded strange. Then after several repetitions of the word he realized that he had put too many in and, temporarily confused, he hesitated before deciding to go on and complete the sentence. Responses to the plant trail include many examples of reiteration of function words as pause fillers while the child is trying to think of the name of a plant, but in such cases there are usually hesitation gaps between each replicated word. Although it is unlikely that this sort of pause filling accounts for the above additions in imitation, the possibility cannot be ruled out. The ungrammatical model sentence of this example caused the addition of material primarily by the older children (over 6). Younger children tended to compensate by omission for the most part.

Lexical addition is frequently used by children to simplify sentence construction in imitation. Insertion of the present tense particla ya creates two sentences constructed in parallel where the model was simply one sentence with compounded verbs, in this example:

(9) M ya š?alah šnič'nah 8
I ya š?alah ya šnič'nah 19

Similarly, the present tense particle is inserted between the main verb and the auxiliary for the same purpose in the following example.

(10) M ya stak' snihkesiš 17
I ya stak' ya snihkesiš 39

Both of the above examples exhibit increased redundancy as a result of the simplification, but there is no obvious change in meaning.

Lexical addition in imitation can, in some instances, be traced to the probability of occurrence of a word in a particular context where its presence is grammatically optional. The following is an example of this kind.

(11) M la stikun ta leel 20
I la stikun tal ta leel 9

The transitive verb tikun ("send") is optionally, but usually, followed by a post-verbal directional modifier, either bel ("going") or tal ("coming"), in natural conversation. The child in this case probably felt some sort of compulsion to add the post-verbal modifier to make the sentence sound more natural, and his choice of modifier may well have been influenced by the sound of the preposition ta, perhaps in elision with the /l/ in leel. This situation then, might be analogous to the regularization by a child of an ungrammatical sentence, except that a rule of probability would be involved here.

Addition of the definite article te in the following example not only increases the symmetry of the complex noun phrase that is based on recursive possessive relations, but also illustrates the structural segmentation of a compound noun (*yaʔlel stiʔ* - "saliva") into two separate noun units.

(12) M spukuhil te haʔlel stiʔ te čane 47
I spukuhil te yaʔlel te stiʔ te čane 23

In the model a right recursive operation joins a string of noun phrases by expressing the possessive relation that obtains between phrases, resulting in a functional unit that can be called a complex noun phrase. That is, all but the last noun in the string are possessed in the third person and each noun is separated from the others by the demonstrative *te*, so that *spukuhil* dominates successive dependencies of noun phrases. In the model *yaʔlel* and *stiʔ* are in immediate constituency with one another. Taken with the preceding demonstrative they comprise a single noun phrase in which the noun is a compound noun meaning "saliva". In the imitation the child puts *te stiʔ* in immediate constituency with *te čane*. Thus *te yaʔlel te stiʔ* must be conceptualized analytically as "its liquid (of) its mouth". The child has restructured the string of the model without really changing the meaning, by lexical addition, simplifying it in terms of rules necessary for its generation, but in all probability adding to the number of conceptual components involved.

A lexical addition may be the secondary result of some other kind of change that the child has made in interpreting the model sentence. Only one child made a mistake in repeating the following imitation model, and the mistake is illustrative here.

(13) M ?an lok'el 11
I ya hk'an lok'el 22

In this case the past tense third person intransitive verb form ?an ("he fled") was probably misheard as the transitive verb k'an ("want") and presumed to be inflected in the first person because no preceding s or ?a? ("third person" or "second person" respectively) occurred. Since transitive verbs are marked for tense by a preceding particle, the verb substitution necessitated an encoding of a tense particle in the production of the imitation. The present tense, ya,may have been selected because of its greater likelihood of occurrence in natural conversation, from cognitive interference of the memory of model sentence number 9 in which k'an is associated with the present tense, from a latent desire on the part of the child to leave (ya hk'an lok'el - 'I want to leave'), or even a combination of these factors.

An adverb phrase is added to the imitation model in the following example, making the resulting imitation more redundant but not very different in meaning, and not grammatically incorrect.

(14) M hič ma to šlah ni wan spas 29
I hič to ni wan ma to ni wan spas 6

The added adverb phrase to ni wan ("still perhaps") slipped into the reproduced sentence on the basis of its previous occurrence in the model. It represents a qualification of the inflectible particle hič ("thus") which in this context could be considered a stative verb. The same adverb phrase in the model modifies the intransitive verb lah ("finish") which is omitted in the imitation.

In consequence the original adverb phrase in the imitation automatically modifies the transitive verb pas ("make") and the added phrase modifies hič. Here the addition of a phrase could not be considered a simplifying operation.

The following example does illustrate simplification by phrase addition.

(15) M me ya?ak'an wah, me kašlan wah 6
I me ya?ak'an wah, me ya?ak'an kašlan wah 33

The added transitive verb phrase creates two coordinated sentences of parallel structure from a model sentence that coordinates only the two noun objects. It could be said that the imitation expresses the deep structure of both more directly than does the model and is therefore simpler because a deletion rule is not required to arrive at the surface structure of the imitation. It is of interest to note, however, that of all the children making imitation mistakes on this model sentence, only the two oldest successfully simplified it by phrase addition.

Although the data provide no examples of mistakes that can be definitely identified as additions on the clause or sentence level, it is likely that such mistakes could occur in elicited imitations. One of the difficulties in identification stems from the quality of imitations needed to justify their use as evidence here. To rule out the possibility of mistaking substitution for addition, the illustrative imitation should add a clause or sentence to a relatively faithful replication of the model sentence.

3.4.3. Substitution of material in imitation

In one sense any incorrect imitation of a model sentence could be considered a substitution of one sentence for another. Or, within the sentence it may appear that a phrase has been substituted for a word or vice versa. Such an interpretation, though often intuitively satisfying, begs the question of analysis. A further breakdown of the nature of the substitution would still be possible, even required, in order to shed further light on the linguistic and cognitive processes under examination. Hence the replacement of one form for another from model to imitation is here treated as a substitution only when both forms are unitary elements on the same structural level.

Substitutions on the phonological level are common and may be quite revealing. Among the most interesting phonological substitutions are those involving assimilation. Assimilation refers to the situation where some phoneme in the imitation is more nearly like its environment than is the phoneme sound in the model. That part of the environment which conditions an assimilative change may precede or follow the changed phoneme, and the two may be contiguous or noncontiguous.

The conditioning environment is noncontiguous with the conditioned sound change in the following example:

(16) M ma hnaʔ bi ʔora ya štal 22
I ma hnaʔ mi ʔora ya štal 6

It is debatable whether the /b/ has here been assimilated to the /m/ of the first word of whether the change was conditioned by the

/n/ of the second word. Perhaps it was a combination of both. In any case the component of nasality determined the direction of the assimilative change. What apparently has happened is that the child's hearing of one sound carried over and interfered with true reproduction of another sound.

Noncontiguous conditioning is also illustrated in the following, but this time the point of articulation rather than the manner is what changes.

(17) M ya stak' snihkesiš 17
I ya štak' šnihkešiš 11

This situation is a bit more complicated. It is intuitively more difficult to understand noncontiguous assimilation in which the assimilated sound precedes the conditioning sound as is illustrated here, than the converse as illustrated in example (16). Moreover, there is only one /š/ in the model as opposed to three occurrences of the phoneme /s/. A partial explanation is the fact that Tenejapa Tzeltal morphophonemics includes some rules of noncontiguous regressive assimilation, what could be called "consonantal harmony" in analogy to the phenomen of "vowel harmony". One of these rules states that an /s/ preceding any /š/ in the same word stem becomes /š/. It is conceivable here that the child is misapplying this rule by overextending it. The enclitic particle -iš meaning "completed action" could be mistaken for part of the verb stem nihkes, resulting, after the addition of the third person singular prefix /s/, in /šnihkešiš/ by application of the rule. The /s/ to /š/ change in the person marker of the preceding verb could then be accounted for by a further extension of the same rule or by interference influenced by the /š/ sounds that predominate after the first mistaken application of the rule.

The model sentence of example (17) was difficult to imitate accurately for two thirds of the children tested, and the difficulty in most of these cases involved the distinction between /s/ and /š/. The model could in fact be called something of a "tongue twister" similar perhaps to our own "she sells sea shells by the seashore", though it is difficult to know to what extent, if any, the purely articulatory aspect of processing either of these influences the verbal replication.

Assimilative vowel substitution occurs and, as with consonants, appears more frequently in the imitations of younger children. The following is an example of a front vowel influencing a preceding back vowel.

(18) M ya to ni wan spas 28
I ya ti ni wan spas 13

In this case the /o/ in the second word was changed in imitation to /i/. There is no legitimate Tzeltal word ti, so it is fairly certain that the mistake was influenced here by phonological rather than semantic factors.

The following is illustrative of a similar kind of assimilative vowel substitution, but this time the front vowel is influenced by a noncontiguous following central vowel.

(19) M k'alal te ya šlihk spasik 7
I k'alal ta ya šlihk spasik 4

Here the /e/ in the second word is changed to /a/. There is a preposition, ta, but its occurrence here would be ungrammatical, so again the mistake can be attributed to the phonological level with reasonable certainty.

An assimilative substitution may be the indirect result of some other mistake in imitation. For example:

(20) M ya to bal ʔaʔloʔ 2
I mak ta ʔáʔloʔ 9

The model utilizes a more formal construction to convey a yes/no question here. The child was able to retrieve the content of the question, but his encoding process restructured the sentence to result in a more informal construction based on the same content. Where the question particle bal could only appear in the third lexical position in the model, the indirect question particle mak could only appear in first position in the imitation to maintain grammaticality, and stress had to be placed on the penultimate syllable in the sentence. The child's choice of construction automatically placed the continuative particle to adjacent to the inflected verb ʔaʔloʔ, separating the vowels /o/ and /a/ by only a glottal stop. Increased proximity of these vowels to one another probably increased the chances of one of them influencing the other. Hence the regressive assimilation of /o/ to /a/ in the particle to of the imitation would probably not have happened if the sentence had not been restructured by the child.

Phonological substitution cannot always be explained in terms of conditioned assimilation. Child number 2 consistently substituted an /š/ for an /s/ in her imitations of every model sentence in which an /s/ occurred. The following exemplifies her personal phonological idiosyncracy.

(21) M la spas yil 13
I la špaš yil 2

Further investigation would be required to see whether hers is a physical articulatory problem or one of immaturity in phonemic differentiation.

A number of children exhibited occasional substitution of /n/ for /l/ as in the following example.

(22) M k'alal te ya šlihk spasik 7
I k'anal ya šnihk spasik 11

The reverse, substitution of /l/ for /n/ in imitation occurs with similar frequency. In fact children's confusion of /l/ and /n/ in either direction was also noticeable during the plant trail and in natural conversations. This confusion, noted on the imitation test for children'numbers 1, 2, 11, 16, and 22, is somewhat surprising and perhaps points up an area of Tzeltal phonology that is worth looking into with some care.

A hesitation pause is the probable cause for the phoneme substitution in the following example.

(23) M ya š?alah šnič'nah 8
I ya š?alah šni.. čnah 2

The consonant /č/ that was substituted here for the /č'/ in the model sentence differs from the latter only in its lack of glottalization. The child was able to correctly reproduce the /č'/ during her previous trial so the substitution here appears to result from hesitation. The reason for such an assumption is that a glottalized consonant in final position is accompanied by glottal constriction of the preceding vowel; after a hesitation pause such a vowel constriction was, of course, no longer possible without restarting the word. Explosive articulation of the glottalized consonant would have signalled its position as initial which was not the case here as it was simply a continuation of the word. The solution to the problem of starting a word in the middle became then a matter of pronouncing the consonant in an unglottalized manner so that the effect became that of a different phoneme to the hearer. Perhaps it could best be described as replacement of one allophone by another from the speaker's point of view, due to a special contingency.

Children numbers 4, 18, and 30 sometimes, but not always, substituted a /v/ for a /w/ in the word wah ("tortilla"). A Tzeltal /w/ corresponds with the Tzotzil /v/ and the Tzotzil word for tortilla is vah. Because of this dialectal difference and because Tzotzil territory is only a stone's throw from mahosik', occurrences of /v/ have been normalized to /w/ in the imitation transcriptions. The cognitive status of /v/ to the children involved is much less clearcut however. The children are siblings in a family that appears to have no more contact with Tzotzil speakers than any other family in mahosik'. They use the Tzotzil word vah sometimes yet they are also able, on occasion, to imitate correctly the Tzeltal word wah. Moreover they never replace /w/

with /v/ in the particle *wan* nor in the verbal noun *wayel*, the only other occurrences of /w/ in the imitations. If this were a case of phonetic free variation then presumably a [v] would have turned up in these other words. Likewise, if [v] were a conditioned allophonic variant in the speech of these children, it should appear in *wan*. On the other hand a morphologically conditioned phonemic variant should not show such instability. But then the instability could be due to the imitation test situation and might not appear in natural conversation. Perhaps the /v/ here has the same status as the /r/ of savoirfaire in English when pronounced "authentically".

Substitutions occur on the morphological level. The following exemplifies a morpheme substitution made necessary by a morpheme addition.

(24) M ya hle hpošil te mač'a ya sna? poštael 52
I ya hle hpošil te mač'a sna? poštawaneh 12

The child created an intransitive verb stem, *poštawan* ("to cure"), from the transitive verb stem, *pošta* ("to cure [it]"), by adding the intransitivizing suffix ⟨ wan ⟩ . But *poštael* ("curing") in the model is a verbal noun, so she was obliged to suffix her newly formed verb stem with a gerundializing suffix. However the ⟨ el ⟩ in the model was no longer appropriate to the stem she had created. Therefore she substituted the appropriate ⟨ eh ⟩ in its place. The resulting word differs only slightly in meaning from that in the model sentence.

While the above example illustrates a morpheme substitution involving derivational suffixes, the following exemplifies substitution involving inflectional prefixes.

(25) M ma hnaʔ bi ʔora ya štal 22
I ma snaʔ bi ʔora ya šta štal 14

In this case the first person singular prefix ⟨ h ⟩ in the second word of the model sentence is replaced by the third person singular prefix ⟨ s ⟩ in the imitation. The extra šta in the imitation represents a false start that was immediately corrected without a hesitation pause.

The substitution above of third for first person singular subject prefix could conceivably be the result of a perceptual processing mistake as the two sounds are somewhat similar in context. Sound confusion is much less likely in the following example of a third person singular subject prefix substituted for a second person singular subject prefix.

(26) M ya to bal ʔaʔloʔ 2
I ya to bal sloʔ 1

In the final word of the model sentence ⟨ ʔaʔ ⟩ is replaced by ⟨ s ⟩ in imitation. One might speculate that the subject person marker was decoded by the child only in such general terms, without specification of which person. Then it would have been simply a matter of almost random selection of a specific person marker for encoding in the imitation.

It is not only affixal morphemes that may be substituted, one for another, in sentence imitation. Root morphemes participate in this process as well, although somewhat less frequently.

In the following example the numeral root present in the model sentence is realized as a different numeral root in the imitation sentence.

(27) M ya hk'an ?ošeb tuc' k'išin tolha? 45
I ya hk'an čeb tuc' k'išin tolha? 28

In the third word of the imitation /č/ occurs as the appropriate allomorph of the morpheme { ča }, "two", whereas the numeral root of the model sentence is { ?oš }, "three". This shows a retreival of form class in its correct syntactic position, but confusion about the selection of the correct class member.

A similar incorrect selection within a general form class is illustrated by the following example, but here the basis for determination of the root morpheme to be selected can be observed.

(28) M ya hle hpošil te mač'a ya sna? poštael 52
I ya hna? hpošil te mač'a ya sna? špoštael 29

Clearly the transitive verb root { na? }, "to know", that is substituted is the second word for the transitive verb root { le }, "to seek", is selected on the basis of its occurrence in the seventh word of the model sentence. There are too many other grammatically appropriate forms that could have been selected for substitution in the imitation to consider this a random coincidence. Moreover several other children made the same sort of mistake when replicating the model sentence. Therefore this substitution can be seen as a variety of retrogressive interference, demonstrating, perhaps, the cognitive salience of an element that is closer in time to the imitation. The issue of salience will be taken up again in later discussion.

The following example illustrates morpheme substitution within the class of wh-question words.

(29) M ma hna? te bit'il ya šč'i 25
  I ma hna? te ya š... bi ?ora ya šč'i 7

Here the child made a false start in her attempt to replicate the imitation model; she started to omit the wh-question word entirely. Realizing this she hesitated before going back to the question word for inclusion. This was enough to throw off her recall of the correct specific wh-question word. Her choice of word was then influenced by interference of what could be thought of as a previously established set, memory of the question word in model sentence number 22 which may have been triggered by the strong structural similarity between model sentences 22 and 25. Such interference from previous sentences are here considered to be a variety of progressive interference by analogy with the labeling of types of assimilation, another kind of interference. The lexeme bit'il can be segmented into the morphemes { bi } "what/which" and { ?ut'il } "way/mode" (realized here as the allomorph /t'il/). The lexeme bi ?ora can be segmented into the morphemes { bi } and { ?ora } "time/hour". The substitution took place on the morphemic level in that { ?util } was replaced in imitation by { ?ora } .

Lexical substitution can occur within any of the major word classes and in a few instances it occurs between classes. The following is an example of replacement of one coordinator by another.

(30) M me sik me k'išin 1
I mak sik mak k'išin 9

Semantically the substitution of mak for ma in this context is quite appropriate. Both coordinators are interrogative here. The form employed by the child, mak, is more informal than the other, more commonly employed, and occurs in a wider variety of syntactic contexts. The notion of probability may thus explain the child's willingness to make the substitution.

Substitution of one tense particle for another is illustrated by the following.

(31) M ya yak'be yuč' 14
I la yak'be yuč' 5

Here the present tense particle ya has been replaced by the past tense particle la. Two other children made the same mistake. Selection of past over present in this case is apparently due to interference from the preceding model sentence, number 13.

In the following example the negation particle ma was substituted in imitation for the past tense particle la.

(32) M la spas yil 13
I ma s... ma spas yil 9

After a false start and hesitation this child continued the incorrect sentence that he had previously begun and discarded. In a negative sentence of this type the tense marker is almost never present, causing the appearance that negation is occupying the position of tense. Quite possibly the limited range of the child's verbal experience at this age has led to the grammatical hypothesis that negation and tense are members of the same syntactic class. It is likely that the selection of ma over ya in this case was due to a cognitive holdover, interference from the preceding sentence, number 12.

Exactly nynonymous forms are involved in the lexical substitution of the following.

(33) M lom lek ya šk'ahin ?a 42
I bun lek ya šk'ahin ?a 4

The synonyms bun and lom, both meaning "very" are describable as intensifying adverbial particles. Selection of bun over lom in imitation is probably due to the child's individual preference for bun, a preference that is observable in the frequency of its occurrence in his natural speech. Both of the child's older siblings tended to prefer the form bun in their normal speech, but neither mistakenly substituted it in the imitations.

The following illustrates an interesting substitution of an adjective for a noun, the two not being related by meaning as in example (33) but rather by similarity of sound.

(34) M ya hk'an ?išim sok ?askal sok wah sok tomut 9
I ya hk'an k'išin sok wah sok ?išim 16

The adjective k'išn ("hot/warm") replaces the noun ?išim ("corn") in the imitation, producing a quite different but acceptable sentence. Because the third person singular object inflectional suffix of a transitive verb such as k'an ("to want") is a zero morpheme, the following adjective k'išin implies the presence of the zeroed object that it modifies in the imitation. This particular imitation also illustrates omission and addition, but these are not directly involved with nor do they obscure the substitution.

A lexical substitution involving the same elements as example (34) but in a reversed situation is apparent in the following.

(35) M ya hk'an ?ošeb tuc' k'išin tolha? 45
I ya hk'an tuc' ?išim tolha? 11

Again the words taking part in the substitution are related by sound rather than by lexical meaning or by form class membership. Because the child has omitted the number *?ošeb* ("three"), *tuc'* becomes the noun "spoon" rather than the noun measure "spoonful". Consequently the sentence as replicated by the child can be viewed as the verb phrase *ya hk'an* followed by a compound object consisting of a listing of nouns. This sentence exactly parallels the structure of model sentence number 9 except that there the nouns are coordinated rather than listed. It seems reasonable to suppose then, that the substitution of example (35) was directed by interference from the child's memory of model sentence number 9, just as the substitution of example (34) was probably directed by interference from model sentence number 1.

Substitutions on the phrase level are difficult to illustrate because of the difficulty of identifying them with any degree of certainty. The following appears to qualify, however.

(36) M la yič' te hulele 18
I li? čiel hulele 1

In this instance the verb phrase *la yič'* has been replaced in imitation by the verb phrase *li? č'iel* (in which /č'/ is realized as /č/, and the article *te* has been omitted from the noun phrase te hulele. The verb phrase in the model sentences consists of tense particle + inflected verb, whereas the verb phrase in the imitation consists of stativized inflectible demonstrative particle + verbal noun: The verbal noun is functioning as an adverbial. It would be pointless to speculate about the cause of the substitution; too many explanations suggest themselves on different structural levels.

Substitutions on the sentence level are more readily identifiable, if not always convincingly assignable to the sentence level. When the imitated sentence has no word in common with the model, sentence substitution is likely to have occurred. Such is the case in the following example, almost.

(37) M ma me š?awuton 4
I me ši tawuton 1

In this case a negative imperative sentence has been replaced by a string of words, tawuton being a nonsense form, that was to all appearances selected arbitrarily on the basis of sound similarities to forms in the model.

One well formed sentence may be substituted for another. The six year old in the following example made such a mistake in imitation.

(38) M ya š?alah šnič'nah 8
I ya šlah ?alal šnič'e 14

Where the model was a sentence consisting of tense + inflected compound verb, the child produced a sentence consisting of tense + inflected intransitive verb + noun object + inflected qualifying noun object + enclitic demonstrative final. The child apparently was confused enough by mishearing the model sentence that he constructed a new sentence for reproduction that was grammatically correct and formed of units similar in sound and meaning to those of the original. While the model can be glossed "They are having children", the imitation is glossed "The baby is dying, his child there".

The following sentence substitution includes the intransitive verb lah in a slightly different sense from that in which it was used by the child in example (38).

(39) M la spas yil 13
I šlah spasbil 11

Notwithstanding the presence of the root form pas in both model and imitation, the substitution here is apparently on the sentence level. The model consists of tense + inflected transitive verb + inflected transitive verb; the imitation consists of aspect + intransitive verb + verbal adjective (passive participle). While the model can be glossed "He made him see (it)", the imitation can be glossed "He was finishing the making of it". Evidently only the concept "make/making" was retrieved in the processing of the model. The child then had to create a sentence for reproduction that used this concept and maintained a similarity of sound, rhythm, and intonation to the model.

3.4.4. Omission of material in imitation

It is well established that English speaking children omit words and morphemes when imitating a model sentence. Although the Tzeltal children represented here are older than most of the English speakers that have been studied through elicited imitations, they too make such omissions in replicating models. They also omit units both above and below the levels of morphemes and lexemes.

Omission on the phonological level is not common and apparently involves only consonant clusters within words or groups of words. The following exemplifies an omission of the phoneme /y/.

(40) M ma hna? bi ?ora ya štal 22
I ma hna? bi ?orail ?a štal 16

Placement of the glottal stop in the fifth word is only by orthographic convention in this example. The child did not actually pronounce it; instead she elided the fourth and fifth words, dropping the /y/ that was present in the model. Had she not added the morpheme ⟨ il ⟩ to ?ora in the imitation, she probably would not have dropped the /y/ for the CVC canon is quite strong in Tzeltal. As it was she omitted the /y/ in her rapidly pronounced imitation in order to reduce the consonant cluster that resulted from her addition.

A similar reduction of a consonant cluster, this time within a word, is found in the following example.

(41) M ya šlok' ta sti? sna 23
I ya šlok' ta si? sna 11

In this case a /t/ is omitted in the imitation. Possibly, as in example (40), this represents an attempt to smooth the word involved into a CVC canon.

As with English speaking children there is a tendency to drop inflections in imitation. In the following, for example, a third person singular prefix is omitted.

(42) M ma stak' šben 12
I ma tak' šben 2

The transitive verb root tak' ("possible/permitted") never occurs without the third singular inflection { s }, and does not take any other person prefix. Thus it is obligatory in more than the usual sense to maintain the { s } of the model in the imitation. Apparently the child had not fully assimilated this rule.

Omission of a first person singular suffix marking the direct object of a transitive verb is illustrated in the following example.

(43) M ma me šʔawuton 4
I me... ma me šʔawut 14

After correcting a false start this child finished correctly but for the mistake of leaving the direct object suffix off the final word. Because the third person direct object inflection is a zero morpheme, the omission of { on } results in an ambiguous sentence that could be glossed as either "Don't scold" or "Don't scold him". It is thus impossible to know whether the child was deleting a conceptual category or substituting another one when he encoded the imitation.

Derivational affixes may also be omitted in imitation. In the following example the omitted morpheme is a universally productive suffix.

(44) M la stabe lok'el tal ta nuk'el 21
I la sta ta lok'el ta nuk'el 5

Although the child here also made a lexical omission and a lexical addition in addition to the morphemic omission, the sentence she produced in imitation is grammatically correct and does not seriously distort the meaning of the model sentence. The indirective derivational suffix { be } signalling an indirect object, was left off the second word in the sentence.

A final illustration of morpheme omission is as follows.

(45) M ya hk'an ?ošeb tuc' k'išin tolha? 45
I ya hk'an ?ošeb tuc' k'išin ha? 13

Here the omitted morpheme { tol }, left off the final word in imitation, is a unique constituent. The word *ha?* in this context can be glossed "water", whereas the word *tolha?* can be glossed "drinking water". Thus the child, by omitting the unique constituent morpheme simply made the referent less specific.

Lexical omission in imitation is relatively frequent. As is the case in English speaking children, the most frequently omitted words are "function words" and auxiliaries. The words least likely to be left out are the semantically most important "content words". Of the major form classes it appears that adverbials are less salient than adjectives which are less salient than nouns or verbs. Head forms are more salient than modifying satellites. In the following example coordinators are omitted in imitation.

(46) M me sik me k'išin 1
I sik k'išin 20

The adverbial particle *to* is omitted in the following example.

(47) M li to ta yut hnai 15
I li? ta yut hnai 9

The preposition *ta* is omitted in the following.

(48) M yakal ta sbohel sk'al 51
I yakal sbohel sk'al 13

There is an obvious explanation for the omission of the preposition *ta* in the following example.

(49) M mutetik ?ay ta ta hamalal 54
I mutetik ?ay ta hamalal 6

The model sentence is itself ungrammatical in that it contains a reiterated preposition *ta*. In imitating the model the child corrected this original error by omitting one of the prepositions. It could be said that she has ignored the repeated word. Older children, around the age of six and upwards, are apparently less able to ignore a repeated word, and frequently make multiple mistakes in an attempt to make grammatical sense of sentence number 54, or even to correctly imitate the model. Roughly by the age of eleven a child can take the word repetition into account without this influencing the processing mechanism to the extent of causing mistakes in imitation.

The particle *te* occurs optionally before the wh-interrogatives (binti, banti, mač'a, bit'il, bi ?ora, and bi yu?un) when they are used as relatives. When present, *te* serves as an overt marker of the relative rather than interrogative status of such expressions. This particle occurs in several of the imitation models and a relatively large percentage of the children tested omitted it in imitation. The following illustrates such omission.

(50) M ma hna? te bit'il ya šč'i 25
I ma hna? bit'il ya šč'i 4

The optional nature of this marker apparently explains the ease with which children drop it from their imitations. It is to be suspected too that the presence of *te* as a relative marker may indicate formal as opposed to casual speech style.

In the following an intransitive verb, *lihk* ("to begin"), functioning as an auxiliary, is omitted in imitation along with the attached enclitic aspect marker { š }.

(51) M k'alal te ya šlihk spasik 7
I k'alal te ya spasik 3

The model is a subordinate clause rather than a sentence. Only one child inserted a tense particle between the auxiliary and the main verb. This could be seen as a successful attempt to create a complete sentence from the model clause. Barring this one possible exception, the children were apparently quite as content to imitate a subordinate clause as a complete sentence.

The following example is illustrative of adjective omission.

(52) M ya hk'an ?ošeb tuc' k'išin tolha? 45
I ya hk/an tuc' k'išin ha? 6

The adjective that was omitted in imitation here is the number "three", ?oŝeb. The resulting sentence leaves the noun measure, tuc' ("spoonful"), unqualified as to number, but is grammatically correct.

Even a noun can be omitted in sentence imitation. For example.

(53) M ya hle hpoŝil te maĉ' a ya sna? poŝtael 52
I ya hle maĉ'a ya sna? poŝtael 23

In addition to leaving out the optional relativizing particle te, the child omitted the noun hpoŝil ("curer"). This omission does not leave the independent clause without an object; it simply implies the presence of the pronominal direct object that is realized as a zero morpheme suffixing the transitive verb stem hle ("I seek"). The imitation is grammatical and not as specific as the model.

Phrase omission is difficult to illustrate, and this is due in part to the ages of the children tested as well as to the relatively short lengths of the model sentences. One might expect adverb and adjective phrases to be omitted with greater frequency than noun or verb phrases. This is not the case in the sample under consideration here. The following example illustrates omission of a phrase that is difficult to classify.

(54) M ya hk'an ?iŝim sok ?askal sok wah sok tomut 9
I ya hk'an ?iŝim sok wah sok tomut 7

The phrase omitted in imitation here is sok ?askal ("and/with" + "sugar"). It is impossible to know whether the sok in this case is functioning as a coordinator or as a preposition.

The following is an example of noun phrase omission.

(55) M yip ʔa ke, čahp htebuk ʔa 50
I čahp htebuk ʔa 13

The omitted noun phrase consists of a first person singular possessed noun ke ("my mouth") preceded by the unitary expression yip ʔa ("only") which itself can be analyzed as a third person possessed noun yip ("its strength") plus the unglossable particle ʔa.

Omission on the clause level occurs in the sample. The following illustrates omission of a dependent clause.

(56) M te bi ya sk'an, haʔ te poše 26
I haʔ te poše 21

A different dependent clause is omitted in the following example.

(57) M k'alal me lah stenik, ya sk'ehik ta ʔala cuetik 53
I ya sk'ehik ta ʔala cuetik 7

There are no examples of independent clause omission.

Omission may occur on the sentence level. The following illustrates loss through imitation of a sentence type that could be called exclamatory.

(58) M tik naš ʔa. ma šhuʔ spasel bayel 10
I ma šhuʔ spasel bayel 6

It is likely that a sample including several imitation models of more than one sentence would produce more examples of sentence omission representing various sentence types.

3.4.5. Rearrangement of material in imitation

As with the other processes of change that a sentence undergoes when an unsuccessful attempt is made to replicate it, rearrangement may occur on any of several different levels. It is possible to distinguish three different types of reordering occurring in the corpus of imitations, but not all types are represented on each level. Permutation will refer here to mutual replacement of adjacent units on a given level. Transposition will refer to mutual replacement of non-adjacent units on a given level. Repositioning will refer to change in the order of elements on a given level that does not involve mutual replacement.

Only transposition is exemplified on the phonological level. The following illustrates transposition of nasal phonemes within a word.

(59) M ya shun ta wayel yinam 46
I ya shun ta.. bayel ʔiman 6

In addition to substituting a /b/ for a /w/ in the penultimate word and a /ʔ/ for a /y/ in the last, this child transposed the /n/ and the /m/ in the final word of the sentence.

The following example illustrates transposition of sibilants occurring between a word and the following enclitic particle.

(60) M ya stak' snihkesiš 17
I ya stak' snihkešis 17

The difficulty that children had in reproducing this model sentence correctly was noted in discussion of example (17). Transposition of the last two sibilants in snihkesiš is only one of several ways that children dealt with the difficulty that is apparently involved in the correct pronunciation of this word.

Permutation occurs on the morphological level as shown in the following example.

(61) M   ya to ni wan spas   28
      I   ya to wani spas   14

The word niwan ("perhaps") comprises the morphemes { ni } and { wan } which have been permuted in this illustration. The result of the permutation is that the two /n/ phonemes are juxtaposed so that they are realized phonemically as only one. Although the meaning of the morpheme { ni } is indefinite, the permutation renders the whole word uniltelligible.

An apparent case of repositioning is the following, in which the third person possessive prefix is taken in imitation from the first word to the last.

(62) M   spukuhil te yaʔlel stiʔ te čane   47
      I   pukuhil te yaʔlel stiʔ te ščane   5

The { s } that has been repositioned here is realized phonemically as /š/ through a morphophonemic rule assimilating it to the /č/ that is present in the noun stem to which it is prefixed. One might speculate that the child somehow felt the absence of the possessive morpheme omitted from the first word and tried to balance the imitated sentence out by attaching this prefix to the nearest unpossessed noun.

All three types of reordering occur on the lexical level, permutation with the greatest frequency. The following example shows a permutation of words in immediate constituency resulting in an ungrammatical sentence.

(63) M   ma hnaʔ te bit'il ya šč'i   25
     I   ma hnaʔ bit'il te ya šč'i   11

As noted earlier, the te in the relative te bit'il construction is optional. It is possible that the child, unfamiliar with inclusion of the te in this construction, noted its presence in the model sentence and simply made an incorrect guess as to its placement in the imitation. On the other hand there might be some cognitive mechanism, perhaps triggered by confusion, that is responsible for the permutation of elements in strings.

Subject and verb are permuted in the following example.

(64) M   mutetik ʔay ta ta hamalal   54
     I   ʔay mutetik ta hamalal   11

In addition to correcting the model sentence by deleting one of the prepositions, this child reversed the order of mutetik ("chickens") and ʔay ("there are"). The resulting sentence is grammatically correct.

The following example represents permutation of lexical elements that might be better described psychologically as repositioning of a single element.

(65) M   la stabe, lok'el tal ta nuk'el   21
     I   la stabe tal, lok'el ta nik'el   16

The post-verbal directional modifier tal is far more frequent in natural conversation than is lok'el, and thus probably has a greater cognitive affinity with the verb. The child has apparently been influenced by a transitional probability here, moving the *tal* into position behind the main verb *stabe* where it sounds more natural.

Lexical transposition is illustrated in the following example.

(66) M ma to ya spas 33
I ya to ma spas 12

Neither the model nor the imitation are grammatically incorrect, but they both sound stilted. The transposed elements, *ma* and *ya* are not of the same form class but they have very similar privileges of occurrence.

Transposition of nouns is demonstrated in the following example.

(67) M ya hk'an ?išim sok ?askal sok wah sok tomut 9
I ya hk'an ?išim sok wah sok tomut sok ?askal 18

In this case *wah* ("tortilla") and *?askal* ("sugar") have traded places through the child's imitation. Most of the children tested had trouble repeating all four of the food denoting nouns of this model sentence in their proper order. The reason remains somewhat unclear.

A case of lexical repositioning is represented by the following example.

(68) M te bi ya sk'an ha? te poše 26
I bi ya sk'an te ha? te poše 18

The optional relativizing *te*, in immediate constituency with *bi*, has been moved in imitation to a position preceding the independent clause, making the sentence ungrammatical. Perhaps the explanation here is similar to that speculated for the permutation noted in example (63).

Reordering of units is not represented in the data on the phrase or clause levels. The following exemplifies sentence permutation however.

(69) M tik naš ?a, ma šhu spasel bayel 10
I ma šhu? spasel, tik naš... ma šhu? spasel,
tik naš ?a 4

The exclamatory sentence tik naš ?a changed places with the negative declarative sentence ma šhu? spasel bayel both in the false start and in the corrected version. This child also omitted the numeral particle bayel ("much/many") in imitation.

3.5. Summary and Conclusion

The foregoing classification of response types derived from the elicited imitation test demonstrates the wide variety of mistakes that can be made by a child in imitating model sentences. Mistakes include those of addition, substitution, omission, and reordering, and these have been shown by examples to occur on several different levels of linguistic analysis. The mistakes made in imitation have been seen to have a number of different explanations, and they appear to provide some clues about the nature of language and speech processing. Such clues can be interpreted to present the following rough outline of some factors affecting the produced imitation of a model sentence.

If a child is able to exactly replicate the correct sequence of phonemes of a model sentence then it is possible to hypothesize either that he has parroted the sentence, or that he has heard the model without significant impingement of external noise factors, has been able to retrieve structural components on the appropriate structural levels from both long and short term memory storage facilities without significant impingement of internal interference factors, and has articulated the appropriate phonological components without significant impingement of motor factors.

Mistakes in reproduction can be due to interference from any of these factors, alone or in combination. Hearing the model to begin with can be impaired by deafness or partial deafness, of course, or it may be obscured by the interference of external noise. The stimulus may be drowned out by extraneous sounds such as a dog barking, human shouting, rain beating on the roof, or the like; or the external noise may not be of sufficient volume to drown out the stimulus, but through volume or content may compete with the stimulus model for the attention focus of the individual. It is possible too, that saturation of the sense organs or temporary deafness could result from overstimulation by external noise sources.

The internal processing of speech is so poorly understood that inferences about its nature are highly speculative. It is assumed that units are decoded for comprehension and encoded for production while passing through some sort of message channel. Apparently this channel is limited in its capacity to process information carrying units in much the same way that the current capacity is limited for the transmission of electricity through wire by the material of which it is composed and by its diameter. The amount of information that can be transmitted at a given moment through either the human or the wire channel depends upon the structure of the code, the way in which information is attached to signal units, as well as the channel capacity for transmission of signal units. It would appear that the potential number of signal units that can pass through the message channel of the individual during a given interval might be relatively small and constant at a given age. In other words, channel capacity for signal units seems to vary somewhat with the individual and with age. This variance is doubtless much smaller than the related variance with individual and age of information units. With age and language practice the individual learns to recode information in larger chunks, attaching each chunk to a signal unit. Thus the amount of information transmitted by each signal unit becomes much greater with age and experience; perceptual units are replaced by conceptual units, meaning assumes greater prominence as reliance on sound is decreased.

The channel appears to be susceptible at certain points, particularly in children, to overcrowding as well as to the impingement of extraneous signals and information units; perhaps in some sense the former allows for the latter by lowering a threshold for interference.

What is referred to as overcrowding of the channel could be the result of sentence length, structural complexity, or some surprising element in the sentence as for example at a point in the utterance of low transitional probability and low redundancy. Regardless of what it is that lowers the interference threshold, this apparently allows extraneous internally generated signals to enter the channel some point during the processing. These signals may carry sounds and sound sequence units, conceptual units, possibly some sorts of ad hoc rules, or combinations of these.

Examples from the Tzeltal imitation data have shown some of the ways in which extraneous signals can enter the message channel and show up in the child's imitation of the model sentence. They suggest that a simple rule can be formulated to apply to a particular sentence only, and that this ad hoc sort of rule can be overgeneralized, perhaps overspecified, and/or even carried in application into other sentences produced. Extraneous conceptual units may enter the message channel also. These may be introduced through feedback during production or they may be stored units of high transitional probability. This is inferrable from the occurrences in the imitations of lexical and form class alternation. The alternate forms may be substituted or added, and when substituted they generally show semantic similarities to replaced forms. Sounds and sound sequence units apparently originate as units of high transitional probability derived from long term memory storage, from feedback during production, from short term memory, and from another kind of memory that might best be thought of as aural imagery, an analogue to the eidetic imagery with which psychologists are familiar (cf. McKellar 1957).

Eidetic imagery, sometimes referred to as "photographic memory" or "pictorial memory", is a vivid afterimage perception -a reproduction of an actual image taking place in the mind's eye- that can contain mistakes and can shift in focus, and hence is not truly photographic. Available evidence indicates that from forty to sixty percent of twelve year olds are capable of eidetic imaging. Incidence is apparently related inversely to age, eighty to a hundred percent of the very young children in some areas being reportedly eidetic, whereas eidetic imagery in adults is excessively rare. It is obvious that this could be advantageous during the years of learning to perceive and interpret the environment, but that later on it could become a severe handicap to the manipulation of concepts and ideas, the smooth flow of which would be hampered by perceptual interference. Similarly an aural analogue to this kind of imagery in which a sense experience can be revived perceptually, minutes, hours, days, and even years later, could be advantageous to the child and disadvantageous to the adult.

Evidence for the existence in children of a related, aural, imagery, is largely anecdotal rather than experimental, but it comes from a variety of sources. American researchers have noted that much of the presleep verbalizing of young children consists of echoing from memory expressions heard much earlier in the day

(Weir 1962). It is observable too, that children often come up with startling non-sequitors that prove to be delayed imitations of overheard remarks of other children or adults. Additionally, young children frequently, when talking to adults, pause for relatively long periods of time, sometimes a matter of minutes, apparently mulling over what has been said, only to abruptly resume a conversation that has already been dropped by the adult because of the pause. The Tzeltal imitation data includes many mistakes that are the results of interferences from sounds and sound sequences. In imitating one model sentence the child will often include portions of previously heard and imitated sentences in his reproduction. Like assimilative mistakes, these are inversely correlated with the age of the child in a general way. With both assimilations and interference from previously heard imitation models, the mistakes are often triggered by similarities in sound, particularly for younger children. The older ones do sometimes exhibit interference from previous sentences, but more often than not they are triggered by similarities of meaning or form class structuring. The surprising number of interferences in imitation from words and phrases belonging to earlier models, sometimes twenty or more sentences previous, is one of the major reasons for proposing the existence of aural imagery in young children. This hypothesis would not only account for many of the phenomena noticed in the speech of children; it also supports the reasonableness of Lenneberg's contention that there is a critical age for first language learning 1967). That is, it is reasonable to suppose that such aural imagery is necessary, or at least very helpful, in learning the phonology, lexicon, and phrase structure of a language in a relatively short time when the tools of experience are unavailable. The post-puberty disappearance of such imagery, due to its becoming a liability rather than an asset, could explain some of the difficulties, particularly phonological, of second language learning.

Continuing the discussion, after this brief digression on aural imaging, mistakes may enter into the sentence imitation that are caused by what could be called motor factors for want of a better term. Correct reproduction would of course be interfered with if the individual's motor nerves to the mouth were cut or otherwise destroyed, or if the child were dumb. Articulation problems can also be caused by cleft palate, harelip, or missing teeth. And finally there are tongue twisting sound combinations. Our own tongue twisters such as "Peter Piper..." and "She sells sea shells..." are good illustrations of the kinds of sequences that can lead to articulatory mistakes in reproduction. It is possible, however, that tongue twisting phenomena are not motor related, but rather result from interferences of short term memory or from feedback. An experiment with delayed feedback might help to clarify this point.

A model sentence may be correctly reproduced in imitation by a child even without his having comprehended the sentence. This can only occur with relatively short model sentences, and is commonly called parroting. With parroting the sentential meaning is not retrieved, but some or all of the sounds are and often in the correct order. Sometimes individual word meanings are also retrieved, but not the structure of the sentence. There are then, degrees of parroting, and it is often impossible to separate the parroted portions of a sentence imitation from those portions that are more fully processed.

Whether parroted or processed, sentence imitations can be viewed from the perspective of the relative salience of elements. Elements of the model that tend to be retained in imitation are said to be more salient. As with English-speaking children, salience for Tzeltal children appears to be function of several different, and often competing factors; stress, semantic importance (information load), order of elements, frequency of having heard an element in the past as well as the present, and the time interval between hearing and reproduction. Interestingly, both the first and last elements of the model have a high degree of salience.

In conclusion, I will reiterate some of the age related generalizations that have been culled from the imitation data. Older children are more productive than younger ones in giving back a grammatically correct sentence that is different in form but not meaning from the model. Older children more often correctly imitate the model sentence without mistakes. Older children pay more attention to semantic structure while younger ones pay more attention to form than to content. Older children are less likely to misinterpret the model and more likely to reinterpret when something is missed rather than giving up. Older children as well as younger ones often omit optional elements. Older children are less subject to interference in imitation from previously heard sentences. Older children are less subject to channel overloading by surprise because they have a wider comprehension. Older children have greater abilities to remember and finish a sentence correctly after a false start or hesitation. Younger children tend to substitute elements more on the basis of sound, intonation, and rhythm where older children tend to substitute elements and structures on the basis of meaning.

From these generalizations it follows that memory, attention span, and recoding abilities increase in the child with age. Experience and intelligence also have their effects on ability to imitate model sentences, and this has been taken into account in the interpretation of the data whenever possible.

APPENDIX A

Orthography and Inflected Grammatical Categories

The orthographic symbols used in this study are based on Berlin's Esbozo de la fonologia del Tzeltal de Tenejapa, Chiapas (1962a). Each symbol represents a segmental phoneme of the Tenejapa Tzeltal language. They are as follows:

Consonantal	/p, t, c, č, k, ?, p', t', c', č', k', b, s, š h, m, n, l, r, w, y/
Vocoidal	/i, e, a, o, u/

Grammatical categories marked by inflection are outlined below after Kaufman (1962).

A. Grammatical categories
  1. The following grammatical categories are marked in transitive inflection: subject, person, plural, imperative, subjunctive, perfective.
  2. The following grammatical categories are marked in intransitive inflection: subject, person, plural, imperative, subjunctive.
  3. The following grammatical categories are marked in stative inflection: subject, plural, subjunctive, and for some types of adjectives, imperative.
  4. The following grammatical categories are marked in nominal inflection: noun class, possession, person, plural.
  5. The following grammatical categories are marked in adjectival inflection: attributive function

B. Person markers
  1. One set of person markers functions as:
    a. possessor of noun
    b. subject of transitive verb
  2. The other set of person markers functions as:
    a. subject of intransitive and stative verb
    b. object of transitive verb

APPENDIX B

The Fieldwork

The fieldwork was done between July 1967 and July 1968. I had spent a month during the summer of 1966 in and around San Cristobal Las Casas meeting potential informants from Tenejapa, learning some of the Tzeltal language, and generally familiarizing myself with the area, geographically and socially, by taking walks in the surrounding countryside and closely observing the relations between the Ladinos of San Cristobal and the Indians who would come to that town to buy, sell, or otherwise visit for profit or pleasure. Thus, in July of 1967 I was ready to accompany my newly hired assistant *h?antun šilom bot* (Antonio Giron Luna), whom I had met the previous summer, to his home in the Tenejapa paraje of *cahal č'en* where I planned to live in his house as part of the family. He was a past sindico (second to the presidente in the civil-religious hierarchy of Tenejapa), about forty-five, a non-believing protestant convert, respected and influential in his paraje, and maintained a household that included two living wives and six children under the age of eight. He was also one of the relatively few Tenejapa Indians having a fairly fluent command of Spanish. Hence Spanish was the contact language, the starting point from which I began to learn Tzeltal.

Having arrived in *cahal č'en* late in July, I spent the first month settling down, becoming accustomed to the new situation, studying the Tzeltal language, eliciting ethnographic information, and familiarizing myself with the field manual mentioned in the introduction.

September was spent getting to know some of the families in the area and selecting a sample of twenty-four children for intensive study including the administration of specially prepared imitation tests. In addition a belief system questionnaire was administered to several of the mothers in the area. Language study continued.

October was spent giving imitation tests to the children selected, observing the interactions of children, making up comprehension and directed production tests, transcribing data collected, studying the language, and making a map of the area. Toward the end of the month it became evident that, due to faulty translation and poor administration of the imitations and belief system questionnaire, the primary data collected thus far was almost worthless. Remaining of value were what I had learned of the language, a corpus of greeting forms, some taped native songs, the naturalistic observations that had been made, and some data of a general ethnographic nature. In addition my informan-assistant felt that his work with me was beginning to curtail his social life. Because of this dissatisfaction on both our parts, I made arrangements to sever our working relationship, found a new assistant through friends in San Cristobal, and moved to the paraje of *mahosik'* in early November.

My new assistant, *hnik kusman č'ihk* (Nicolas Guzman Lopez), was closer to my own age and anxious to please. What he lacked in experience he made up for in willingness. A young man of about twenty-eight, he had a wife and three children, spoke a limited but adequate amount of Spanish, was neither Catholic nor Protestant, had never held a cargo position, and lived with his wife and children in the house of his parents. He was to lose his oldest son and his father and to gain a second wife during my stay. Being relatively well off, he owned a spare house a few yards from the one in which he slept, and I moved into the spare. The conservative paraje of mahosik' was suspicious from the beginning of my presence in their sparsely settled dispersed community, an attitude that broke down only slowly and never completely. Nonetheless I was pleased and comfortable in the new surroundings and set to work directly.

It was in mahosik' during the month of November that I began to know enough of the language to realize how useless much of the data collected previously was. This did not detract from the value of observations and experiences of the first few months in the field. I continued to study the language in nightly informal sessions, selected another group of children for study, and administered some belief system questionnaires. It became necessary to tape record these questions one by one near the end of the month in order to get satisfactory results. Moreover, lack of success with comprehension and directed production tests forced me to drop them from the schedule. The imitation model sentences were recorded on tape to be used as the stimulus.

December saw work really moving forward. I began to religiously keep my daily journal up to date,witnessed the burial of my assistant's father, met new children and started to get well enough acquainted to observe their normal behavior, put in writing many of the local socialization customs, elicited most of the color terms, gave imitation tests, continued searching for and found a suitable subject for one of the key areas of the project (obtaining a 700 utterance corpus at intervals for longitudinal grammatical analysis),added a semantic dimension to the project by testing children's plant identification abilities, continued language study, and elicited general ethnographic information.

By the end of December my own language learning was progressing steadily and most of the work of the next six months was fairly well mapped out. From January to the middle of May 1968 I concentrated on monthly recordings of natural conversation between a mother and her two-and-a-half year old daughter, continued the plant identification schedule and the elicited imitation schedule, observed child interaction, participated in community life (e.g. gossip, fiestas, house visits, curing, etc.), and when time permitted, elicited more general ethnographic information from my assistant and from unpaid informants.

In the middle of May I went to San Cristobal with my assistant in order to transcribe some of the taped data, returning to mahosik' for a few days in the middle of June to record natural conversation. By then it was about time to return to the U.S., but transcription was not nearly finished, so it was decided that my assistant would return with me to live in the U.S. for three months. This he did, to both our profits. We arrived in Berkeley at the beginning of July, six days after having left San Cristobal. For the next three months we transcribed and analyzed tapes, discussed Tenejapa culture, reviewed much of what I had learned in the field, gossiped, and spent many hours in the elicitation of Tzeltal linguistic and ethnographic data.

The ceremonial center of the municipio of Tenejapa is a primarily Ladino community referred to here as Tenejapa center. Perhaps a hundred or more Ladino families reside there permanently. Virtually no Ladinos live in the outlying hamlets, here called parajes. A number of Indians own houses in Tenejapa center, but very few are permanent residents. The families of those Indians in the service of major cargos in the civil-religious hierarchy move to the center for the duration of the year of office. They often live in rented or borrowed houses, moving back to their native parajes at the end of the year. Tenejapa center is located about twenty miles northeast of San Cristobal. It can be reached by jeep in from three to five hours on a dry day; otherwise it is a five to seven hour walk from San Cristobal. Within a few years a highway that is now under construction will make Tenejapa accessible to any car.

The paraje of cahal č'en is about five miles from Tenejapa center and to the East. It is situated on the banks of the river yašanal, the other side of which is the Tzeltal municipio of Oxchuc, and can be reached only on foot or by horse or mule. The Saturday Indian market at yočib is about twenty minutes walk downstream at the boundary connection of three Tzeltal municipios, Tenejapa, Oxchuc, and Cancuc. Two to five hundred Indians from various municipios gather there every Saturday morning to buy and sell food and other items.

The paraje of mahosik' is located about ten miles to the North of Tenejapa center, bordering the Tzotzil municipio of San Pedro Chenalhó. There are no roads and the hike or muleback ride from the center to mahosik' takes from four to six hours, much of it being downhill.

Because it was one to two days journey between San Cristobal and either of the two parajes in which I lived, my trips into San Cristobal for supplies occupied from two to five days between intervals of roughly a month at a time in the mountains. These trips were not only necessary but also valuable for the glimpses that I got of trail etiquette, Ladino-Indian relations, fiestas, and many other things that would have remained unobservable from the outlying parajes.

My major informants were the two assistants already mentioned. They both wrote texts, participated in formal elicitation sessions, answered questions, volunteered information, and served as link and interpreter between myself and the Indian community. Their families too were helpful and provided much subsidiary information of an informal nature. In addition some community specialists, such as the principal and the maestro, were consulted as informants. The bulk of the language acquisition data, however, came from the children and the mothers that were interviewed, tested, and observed.

APPENDIX C

Plant Trail

This appendix contains a listing of the plant trail specimens and their tentative botanical identifications wherever possible, as designated in the field by the University of California botanist Dennis E. Breedlove. This is followed by a section containing the responses given by children for each plant that they were asked to name. Each Tzeltal plant name heads a list of twenty-three numbered responses. The numbers identify children and refer to Table III, in which the youngest child has the lowest number and the oldest child has the highest. Where the child gave more than one response for a particular plant the responses are separated by a comma. Where a use or description was volunteered, it is noted here as a (u). A hyphen indicates that the child was unable to name or give information about a plant that was shown to him. A blank space indicates that the child was not shown the plant for identification.

paka? - Leucaena
bac'il lo?bal - Musa paradisica
ščekul - Portulaca oleracea
sakil lo?bal - Musa paradisica
moen č'o - Physalis gracilis
sc'ul - Amaranthus hybridi
tumat - Physalis philadelphicus
kelem tusus - Tagedes erecta
cacames - Sida rhombifolia
kak'an - Chenopodium ambrosioides
č'ič' bat - Croton draco
k'isis tah - Pinus chiapensis
šču?il' čenek' - Phaseolus
sak bahte? - Buddlia americana
kulantu - Coriandrum salivum
wena - Mentha
moen - Solanum douglasii
tulesna - Prunus
maču lo?bal - Musa paradisica
h?antun kerem - Euphorbia hypericifolia
?ahk'ubal moen - Diastitia micrantha
muy - Lantana
mancana lo?bal - Musa paradisica
we?el buluk' sit - Bourreria lavis
ha?as wamal - Oenothera rosea
wahtan wamal - Ageretum
bac'il wale? - Sacchrum officionale
k'eweš - Annona cherimoya
cahal nič wamal - Lopezia hirsuta
sera lo?bal - Musa paradisica
tahtam - Desmodium strobelacium
kahpeh - Coffea arabica

č'aal bok - Cestrum nocturnum
?alčaš - Citrus sinensis
conte? - (bryophite)

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yihcin nitem k'ahk' - Sanicula
č'uhč'ul cib - Asplenium
ha?as - Poutreria mamosa
karanato - Pasiflora quadrangularis
?iw - Persia americana
sitit - Vernonia
bat - Heliocarpus donnell-smithii
?ac'amte? - Rapanea myricoides
pahčiak - Psidium guiniensis
manko - Mangifera indica
ču?lima - Citrus
yakan paloma wamal - Irescine celosia
sakil šašib - Acacia angustissima
?on - Persia americana
wočol ?akan wamal - Melampodium
cahal lo?bal - Musa paradisica
pošil ši?wel - Phylanthus nouriri
cuhkum ?ak - Setaria geniculata
šyaš ?ak -
pirimahk' - Lobelia laxiflora
čikč'iš - Mimosa albida
yat c'i? wamal - Hamelia patens
tuht - Equisetum myriochaetum
mumun - Piper
balank'in - Polymnia maculata
čahp ?ak -
conlum - (bryophite)
cuy ' - Liabum glabrum
k'anču? wamal - Euphorbia graminea
tunim čih wamal - Calea
čenek' mut - Canavalia hirsutissima
pečeč ?ak - Paspalum
sak munas te? - Lippia hypoluca
k'uš balil šašib - Lysiloma
?ahoh - Saurauia scabra
cahalči?in nič wamal - Odontonema
č'oliw - Dahlia imperialis
yašal cib -
č'ahkil - Tithonia diversifolia
pomte? -
kamare ?ak -
č'opak - Polygala floribunda
šbohtil čenek' - Phaseolus formosis
wale?te? poš - Arthrostema ciliatum
bac'il halal - Merostachys
?ič'ote? - Rhus striata
lamte? -

cu?um - Pennicetum bambusiformi
bac'il tah - Pinus oaxacana
cahal k'am?ak' - Cuscuta tinctoria
wet wamal - Lantana
ha?aste? -
yaš ?okinte? -
bakte? sun - Verbiscina turbacensis
tumat wamal -
yehk'eč šuš - Cassius
mol - Triumfetta dumetorum
pah ?ul?ul wamal - Rhus terebinthifolia
bac'il makum - Rubus adenotrichus
smayil čan -
cic - Persea americana var. drymifoli
tinta wamal -
k'ab ščohte? - Oreopanax xalapensis
snabute? čil - Verbiscina gigantoides
sun - Tithonia scaberima
cib - Pteridium aquilinum
šč'uč'il ba?ben - Canna edulis
?ahate? - Casimiroa edulis
č'uhč'ul c'eman - Commilina diffusa
c'elel - Inga
tunim čih ?ak' - Pavonia paniculata
yoy -
bac'il c'eman - Tripogandra elongata
sabal c'unun - Salvia cinnabarena
pišol nič - Lippia substrygosa
karawanco - Pisum sativum
?ičil ?ak' - Clematis grossa
halate? cop - Vibernum blandum
c'usub - Vitis bourgaeana
č'išitah -
topakte? - Senicio
takin č'iel - Desmodium
sakil c'eman - Epidendrum ibaguense
cop - Vibernum hartwigii
k'anal nič wamal - Lisantus cuspidatus
k'an ?ak -
?uč'imte? -
?uhkum - Erythrana chiapasana
kurus ?eč' - Tillandsia guatemalensis
?eč' - Tillandsia
šuč' nič - Cuphea intermedia
cahal cib - Selaginella
nitem k'ahk' - Eryngium
sibal ?ak -
šwiš ?uskum -
mahtas - Bidens pilosa
mustisa - Brassica campestris

?uskum	- Galinsoga caracasana
tuhk'ulum č'iš	- Solanum hispidum
botbot wamal	- Castilleja arvensis
tok'oy	- Salix bonplandiana
čiilte?	- Sambucus mexicana
k'u čič	-
bac'il c'inte?	- Manihot esculentis
kašlan c'inte?	- Manihot esculentis
cahal c'inte?	- Manihot esculentis
cahal či?in	- Ipomea batatas
sakil cahal či?in	- Ipomea batatas
pahal mac' či?in	-
petrona wale?	- Sacchrum officionale
č'omate?	- Sechulum edulae
k'ahk'al lo?bal	- Musa paradisica
kinya lo?bal	- Musa paradisica
yihk'acte?	- Struthanthus marginatus
kuliš ?ek'	- Cnidoscolus multilobatus
pimil c'eman	- Bryophytum
ca?ak	-
hot'ben cawen	- Mimosa invisa
mayil	- Cucurbita fisifolia
holomaš či?in	- (araceae)
tim	- Yucca elephantipes
či	- Agave
bac'il k'ante?	-
panyat wamal	- Asclepias currasivica
pata	- Psidium guajava
kuliš pimil	- Sonchus oleraceus
ca?tuluk'	- Diospyros dygina
p'uhk	- Dioscorea
paterna	-
kašlan kulantu	- Eryngium
skulantu čitam	- Apium leptophylum
?oscel ?ak	- Cyperus
bahk'el wamal	- Bidens squarosa
tilil ha?	- Parathesis chiapensis
ca?hihte?	- Quercus peduncularis
mumunte?	- Piper scabrum
nehči ?ak	-
yak' c'i?	- Plantago hirtella
?onte?	- Persia americana
čin?ak' pošilca?nel	- Cissampelos pareri
čahp či	- Fucrerea
kašlan pata	- Eugenia jambos
ni?šihč'	- Baccharis trinervis
ca?tuluk'te?	- Piper
?ihk'uyeh	- Smilax jalapensis
?ičimte?	-
yisim balam	- Ximenia

k'ušben c'anan - Brickelia guatemalensis
sakil č'iht - Eugenia acapulsensis
čaniw - Lasiacis divericata
pihpih ?ak -
čimol ?ak - Paspalum
nohk'oš ?ak' - Rhus radicans
cahal ?ak - Tripsicum
ma?ču? lima -
?išim - Zea mays
sakaton - Panicetum cetosum
yakan k'ulub wamal - Verbena littoralis
slok'omba tuht - Eleocharis
sot čan wamal - Crotalaria
č'opak wamal - Polygala paniculata
šanab mut wamal - Euphorbia hirta
kašlan čenek' - Arachis hypogea
č'akiw - Oxalis latifolia
me?sak'alha? wamal - (composit)
šte? čenek' -
mokoč tah - Pinus michoacana
šašib wamal - Cassia rivularis
sakil čin?ak' - Ipomea
yašal nič čin?ak' - Ipomea
č'ič' ni? - Calliandra houstoniana
k'am ?ak' - (composit)
šmal waš - Anoda cristata
č'um - Cucurbita moschata
sahalum -
šlumil čenek' - Phaseolus vulgaris
?awaš - Vicia faba
concih - Anthericum eulitherandum
beleko lo?bal - Musa paradisica
tuš?ak -
šyaš čin?ak' - Ipomea
cirin čin?ak' - Ipomea

TABLE III

Plant Trail Subjects

No.	Name	Age	Date Tested
1	šmik ?incin poral	3-5	3/15/68
2	hpetul kusman ?osil	4	3/18/68
3	šmal peres	4-5	4/1/68
4	š?an kusman ?osil	5	5/14/68
5	šmal ?incin poral	4-6	3/5/68
6	hmanel kusman ?osil	6	3/26/68
7	š?anton ?ernantes č'en	6	12/7/67
8	š?anton ?ernantes č'en	6	5/6/68
9	hpetul kusman č'ihk	6	11/20/67
10	hpetul belasko šil	6-7	5/14/68
11	šmal kusman ?osil	7	3/20/68
12	hšaw ramines kohtom	7	5/7/68
13	š?anton belasko šil	7	5/13/68
14	h?antun kusman ?osil	7	5/9/68
15	š?anton kusman ?osil	7	5/11/68
16	h?antun lopis p'ut	7-8	5/5/68
17	špet kusman ?osil	8	3/27/68
18	š?anton ramines kohtom	8-9	5/10/68
19	š?anton belasko šil	9	4/4/68
20	h?aluš kusman ?osil	8-10	5/13/68
21	h?aluš ?incin poral	11	3/28/68
22	štin kusman c'uhkin	12	1/12/68
23	šmal kusman č'ihk	12-13	3/19/68

	paka?	bac'il lo?bal	ščekul	sakil lo?bal
1	šašib		ščekul	lo?bal, mancana
2	č'ič' ni?		ščekul	lo?bal, mancana
3	šašib	sakil lo?bal	čekul	sakil lo?bal
4	šašib, (u)	lo?bal, (u)	ščekul, (u)	lo?bal, (u)
5	paka?		ščekul	tonton lo?bal
6	paka?		ščekul	sakil lo?bal
7	paka?		čakul	sera lo?bal
8	šašib, paka?	lo?bal, čahp	čekul	mancana lo?bal
9	šašib		ščakul	sakil lo?bal
10	paka?, (u)	lo?bal, sakil	ščekul, (u)	cahal lo?bal
11	paka?		ščekul	?ik'os lo?bal
12	paka?	sera lo?bal	ščekul	sakil lo?bal
13	paka?, bac'il	lo?bal, bac'il	ščekul, sakil	lo?bal, bac'il
14	paka?	sera	ščekul	sakil lo?bal
15	šašib, bac'il	lo?bal, (u)	ščekul, (u)	lo?bal, (u)
16	šašib, paka?	lo?bal, bac'il	ščekul	lo?bal, bac'il
17	paka?	kinya, mancana	ščekul	mancana
18	paka?, šašib	sera lo?bal	ščekul	sakil lo?bal
19	šašibte?,paka?	sera lo?bal	ščekul	sakil lo?bal
20	šašib, paka?	lo?bal, sera	ščekul, (u)	cahal lo?bal
21	paka?	sera, bac'il	ščekul	sera, sakil
22	paka?		ščekul	sakil lo?bal
23	paka?		ščekul	sakil lo?bal

	moen č'o	sc'ul	tumat	kelem tusus
1	moen	sc'ul	tumat	– , ničim
2	moen	sc'ul	tumat	(u)
3	(u)	c'ul	makum	tusus
4	moen č'o, (u)	sc'ul, (u)	(u), moen č'o	?ala wamal
5	moen č'o	sc'ul wamal	tumat	tusus, bac'il
6	moen, ?ala tumat	sc'ul	tumat	tusum
7		wamal	tumat	tusus
8	moen č'o	c'ul	tumat	wamal
9		–	tumat	–
10	moen č'o, (u)	sc'ul, (u)	tumat, (u)	tusus, kelem,(u)
11	moen č'o, (u)	sc'ul	čičol, tumat	tusus, yašal
12	moen	sc'ul	tumat	ničim
13	tumat	sc'ul	tumat	ničim
14	moen	sc'ul	tumat	tusus
15	moen č'o, (u)	sc'ul, (u)	tumat, (u)	ničim, tusus,(u)
16	tumat, bac'il	sc'ul	tumat	tusus, bac'il
17	?ala tumat, čahp	sc'ul	tumat	tusus
18	moen č'o	sc'ul	tumat	tusus, ničim
19	moen č'o	sc'ul	tumat	kelem tusus
20	moen č'o	sc'ul	tumat,?ičil?ok	tusus
21	moen č'o,kurup sin	sc'ul	tumat	kelem tusus
22		sc'ul	tumat	tusus
23	moen č'o	sc'ul	tumat	tusus

	cacames	kak'an	č'ič' bat	k'an č'iš
1	cacames	-	č'ič' bat	
2	mes	kahk'an	bat, bac'il	
3	mes	kahk'an	te?	
4	cacalmes, (u)	wena, (u)	k'ante?	?ala nič wamal
5	cacames	kak'an	č'ič' bat	
6	mes	kahk'an	bat, čahp	
7	coc mes	kak'an	č'ič' bat	
8	mes, čahp	kak'an	bat, čahp	č'iš
9	mes	-	č'iš bat	
10	mes, cacalmes	kahk'an, (u)	č'ič' bat	-
11	cacalmes	kak'an	č'ič' bat	
12	mes	kak'an	č'ič' bat	
13	mes	kak'an, sakil	č'ič' bat	k'an č'iš
14	cacames	kahk'an	č'ič' bat	k'an č'iš
15	mes, (u)	kak'a?an, (u)	bat, (u)	?ala tumat, (u)
16	mes, bac'il	kahk'an	č'ič' bat	č'iš, bac'il
17	mes	kahk'an	č'ič' bat	
18	mes	kak'an	č'ič' bat	čahp č'iš
19	mes, cacalmes	kahk'an	č'ič' bat	
20	cacalmes	kak'a?an	č'ič' bat	k'an č'iš
21	cacames	kak'an	č'ič' bat	
22	cacames	kak'an	č'ič' bat	
23	cacames	kak'an	č'ič' bat	

	k'isis tah	šču?il čenek'	sakbahte?	kulantu
1	cahal tah	čenek' šču?il	sakilte?	kulantu
2	(u), tah	čenek'	sitit	kulantu
3	tah		wamal	kulantu
4	tah, (u)	čenek', (u)	wamal	kulantu, (u)
5	k'isis tah	šču?il čenek'	sakilte?	kulantuil
6	tah, čahp	čenek', šmoil	wamal, čahp	kulentu
7		šmoil čenek'		
8	tah, čahp	čenek', šmoil	wamal, čahp	kulantu
9	tah	čenek'		kulentu
10	tah, kisis	šču?il čenek'	-	kulantu, (u)
11	tah, k'isis	šču?il čenek'	sakmunaste?,sitit	kulentu
12	tah	čenek', šču?il	te?, (u)	tunim, (u)
13	mamal tah	šbohtil čenek'	sakbahte?	kulantu, sakil
14	tah	šbohtil čenek'	sakpehcte?	kulantu
15	k'isis tah	čenek', šlumil	te?, (u)	kulantu, (u)
16	tah, bac'il	čenek', bac'il	-	kulantu, bac'il
17	tah, čahp		sak munaste?	kulentu
18	k'isis tah	čenek', šbohtil	te?	kulantu
19	k'isis tah	šču?il čenek'	- , sitit	kulantu
20	k'isis tah	šbohtil čenek'	-	kulantu
21	k'isis tah		sak bahte?	kulantu
22		šču?il čenek'		kulantu wamal
23	k'isis tah	šču?il	sak bahte?	kulantu

	wena	moen	tulesna	maču lo?bal	h?antun kerem
1	wena	moen	tulesna	mancana	-
2	wamal,wena	moen	tulesna	?ik'os	pošil čin
3	kulantu	moem č'o	tulesna	mancana	wamal
4	wena, (u)	moen č'o, (u)	tulesna, (u)	lo?bal, (u)	wamal,k'anal
5	wena	moen	tulesna	maču lo?bal	(u)
6	kahk'an,wena	moen	(u)	kinya	špošil ?akanil
7	wena	moen	tulesna	maču lo?bal	
8	wena	bok, moen	tulesna	maču	wamal, čahp
9	wena	č'al bok	tulesna	maču lo?bal	
10	wena, (u)	moen č'o, (u)	tulesna, (u)	maču, (u)	-
11	wena	moen	tulesna	maču lo?bal	cahalte?
12	wena	moen	tulesna	maču lo?bal	wamal
13	wena	moen č'o,sakil	tulesna,sakil	lo?bal, maču	sakil wamal
14	wena	moen č'o	tulesna	maču	pošil čin
15	wena, (u)	moen č'o, (u)	tulesna	lo?bal, (u)	wamal, (u)
16	wena, bac'il	moen, bac'il	tulesna	maču lo?bal	-
17	wena	moen	tulesna	maču lo?bal	pohowil wamal
18	kulantu	moen	tulesna	maču lo?bal	wamal, čahp
19	wena	moen č'o, moen	tulesna	maču lo?bal	špurowok wamal
20	wena	moen, moen č'o	tulesna	lo?bal, maču	šporowok wamal
21	wena	moen	tulesna	maču lo?bal	cahal?ok wamal
22	wena	moin	tulesna	maču lo?bal	-
23	wena	moen	tulesna	maču lo?bal	h?antun kerem

	?ahk'ubal moen	muy	mancana lo?bal	we?el buluk' sit
1			mancana	wamal
2			mancana lo?bal	mes
3	wamal		sakil lo?bal	wamal
4	?ala wamal	?ala te?	lo?bal, (u)	?ala wamal
5			mancana lo?bal	
6			mancana	-
7			lo?bal	
8	wamal	wamal	mancana	wamal
9			mancana lo?bal	
10	-	sakmunaste?	lo?bal, mancana	yašal we?el čan
11			?ik'os lo?bal	wamal, čahp
12	?ala bok	wamal	mancana	wamal
13	sbok hč'ume?tik	špošil may	lo?bal, (u)	wamal, (u)
14	-	-	mancana	swe?el buluk' sit
15	wamal, (u)	špošil may	lo?bal, (u)	wamal, (u)
16	-	-	lo?bal	-
17	?ahk'ubal moen		mancana	mes
18	?ihk'ubal moen	-	mancana lo?bal	wamal, čahp
19	?ahk'ubal moen		mancana lo?bal	k'ulub wamal
20	sbok hč'ume?tik	špošil may	lo?bal, mancana	yakan k'ulub wamal
21	?ahk'ubal moen		mancana lo?bal	-
22			mancana lo?bal	
23			mancana	čahp wamal

	ha?as wamal	wahtan wamal	bac'il wale?	k'eweš
1	-	(u)	wale?, mancana	k'eweš
2	(u)	-	wale?, (u)	k'eweš
3	wamal	wamal	wale?	te?
4	wamal	wamal	wale?, (u)	k'eweš, (u)
5		čahp wamal	cah wale?	k'eweš
6	-	-	wale?, ?ihk'al	k'eweš
7			wale?	k'eweš
8	čahp wamal	wamal	wale?, bac'il	k'eweš
9			wale?	k'eweš
10	-	wamal, (u)	wale?, (u)	k'eweš, (u)
11	cah šnič wamal	cahal wamal	wale?, cahal	k'eweš
12	?ala ničim	wamal	wale?	k'eweš
13	cahal wamal	sakil wamal	wale?, cahal	k'eweš
14	?ala ničim	ničim wamal	wale?, k'anal	k'eweš
15	wamal, (u)	ničim, (u)	wale?, (u)	k'eweš, (u)
16	-	-	bac'il wale?	k'eweš, (u)
17	-	sakil wamal	bac'il wale?	k'eweš
18	(u), wamal	(u), wamal	wale?, sakil	k'eweš
19	čahp wamal	čahp wamal	wale? petrona	k'eweš
20	-	yašal nič wamal	wale?, bac'il	k'eweš
21	cahal wamal	sakil nič wamal	bac'il wale?	k'eweš
22		-	bac'il wale?	k'eweš
23	-	wamal	wale?, ?ihk'al	k'eweš

	cahal nič wamal	sera lo?bal	tahtam	kahpeh
1	cahal ničim	mancana lo?bal	wamal	kahpe
2	(u)	?ik'os	?ac'amte?, č'iš	kahpe
3	wamal	mancana lo?bal	wamal	kahpe
4	wamal	lo?bal, (u)	wamal	kahpe
5	cah	cahal lo?bal	čahp čin?ak'	kahpe
6	ničimetik	sakil lo?bal	ničimetik	kahpe
7	bac'il wamal	sera lo?bal	wamal	kahpe
8	wamal	mancana lo?bal	wamal	kahpe
9	ničim wamal	sakil lo?bal	mes	kahpe
10	-	sera, (u)	hot'ben cawen	kahpe, (u)
11	-	sera	hochoc wamal	kahpe
12		sera lo?bal	wamal	kahpe
13	cahal wamal	lo?bal, kinya	sakil wamal	kahpe, (u)
14	?ala ničim	sakil lo?bal,sera	č'iš	kahpe
15	wamal, (u)	lo?bal, (u)	wamal, (u)	kahpe
16	-	lo?bal, bac'il	-	kahpe, (u)
17	cahal ničim	kinya	tahtam	kahpe
18	wamal, čahp	sera	wamal, čahp	kahpe, (u)
19	čahp wamal	sera lo?bal	tahtam	kahpe
20	-	lo?bal, sera	hot'ben cawen	kahpe, (u)
21	-	kinya	tahtam	kahpe
22	cahal wamal	serena lo?bal	tahtam	kahpe
23	-	sakilcahal,kinya	tahtam	kahpe

	č'aal bok	?alčaš	conte?	yihcin nitem k'ahk'
1		?alčaš		
2		?alčaš		
3	č'ahte?	?alčaš	scocil	wamal
4	č'aalte?, (u)	?alčaš, (u)	-	wamal
5		?alčaš		
6		?alčaš		ničimetik
7	č'aal bok	?alčaš		
8	č'aal bok	?alčaš	bislululte?	pošil ?eil
9	č'aal bok	?alčaš		
10	č'aalte?, (u)	?alčaš, (u)	-	-
11		?alčaš		wamal
12	č'aalte?	?alčaš	sbislul	wamal
13	č'aalte?, (u)	?alčaš, (u)	sconte?al ?alčaš	?ihk'al wamal
14	č'ahte?	?alčaš	sbisbulul,sbolil	ničim
15	č'aalte?, (u)	?alčaš, (u)	(u), (u)	wamal, (u)
16	č'aalte?	?alčaš	-	-
17	č'aal bok	?alčaš	sulil	-
18	č'aalte?, bok	?alčaš	-	wamal, čahp
19	č'aalte?	?alčaš	conte?etik	čahp wamal
20	č'aalte?, (u)	?alčaš	conte?, (u)	-
21	č'ahte?	?alčaš	conte?	hel čikin wamal
22	č'aalte?	?alčaš		
23	č'aal bok	?alčaš		

	č'uhč'ul cib	ha?as	karanato	?iw	sitit
1		č'ič' bat		mancana te?	č'ič' bat
2		ha?as		sitit	sitit
3	čahp wamal	kok	wamal	wamal, čahp	te?
4.	wamal	wamal	karanato, (u)	wamal	te?, (u)
5		ha?as	-	?iw	sitit
6		ha?as		?iw	sitit
7		ha?as		?on	čahp te?
8	wamal, siben	(u)	kanarato	cic?on	te?
9		ha?as		?iw	sak munaste?
10	cib, (u)	ha?as, (u)	karanato, (u)	?iw, (u)	-
11		ha?as		?iw	sitit
12	wamal	ha?as	karwanato	?iw	sitit
13	cahal wamal	ha?as, (u)	sakil wamal	cic, sakil	sakil wamal
14	-	ha?as	karanato	-	sitit
15	wamal, (u)	ha?as, (u)	karanato, (u)	ha?as, (u)	te?, (u)
16	cib, bac'il	ha?as	karanato	cic	sitit
17	-	ha?as	yal ?iw	?iw	sitit
18	wamal	ha?as	karanato	ha?as	te?, sitit
19	cib	ha?as	karanato	?iw	sitit
20	cib	ha?as	?ihk'uye, (u)	?iw	sun
21	?ala č'in cib	ha?as	karanato	?iw	sitit
22		ha?as		pahčiakte?	sitit
23		ha?as		?iw	sitit

	bat	?ac'amte?	pahčiak	manko	ču?lima
1	bat	šašib	pata	manko	?alčaš, lima
2	bat	-	pata	manko	?alčaš
3	te?	te?	pata	manko	?alcas
4	k'ante?	wamal	pata, (u)	manko, (u)	?alčaš, (u)
5	bat	tok'oy	pahčiak	manko	lima
6	č'ič' bat	č'iht	pahčiak	manko	?elemoneš
7	bat	?ac'amte?	pahčiak	manko	lima
8	bat, čahp	?ac'amte?	pata	manko	lima, cihil
9	bat	-	pahčiak	manko	lima
10	bat, sakil,(u)	ca?tuluk'	cahal pata	manko, (u)	lima, (u)
11	bat	?ac'amte?	pahčiak	manko	lima
12	bat	te?, hihte?	pata	manko	lima
13	č'ič' bat	?ihk'alte?	sakil pata	manko, (u)	lima, sakil
14	bat	?ac'amte?	pahč'ak	manko	bac'il lima
15	bat, (u)	te?, (u)	pahčiak', (u)	manko, (u)	lima, (u)
16	bat	hihte?	pahčiak'	manko	lima, bac'il
17	bat	tok'oy	pahček	manko	lima
18	bat, ?ancil	te?	pata, bac'il	manko	lima, bac'il
19	bat	?ac'amte?	pahčiak	manko	lima
20	bat, sakil	cop	pahčiak	manko	lima, cihil
21	bat	?ac'amte?	pahčiak	manko	lima
22	bat	cahalte?	pahčiak	manko	lima
23	bat	-, čikinib	pahčiak	manko	lima

	yakan paloma wamal	sakil šašib	?on	wočol ?akan wamal
1	mes	šašib, č'ič'ni?	te?,?ahate?	wamal, cahal
2	cahal mes	šašib, (u)	?on	?ištabil
3	wamal, sc'ul	šašib, šašibil	?on	wamal
4	wamal	šašib	cic	?ala wamal
5	čahp te?	šašib	?on	k'an ya šničin
6	-	šašib	?on	ničimetik
7	wamal	šašib, bac'il	?iw	wamal
8	wamal	šašib, čahp	?on, cic?on	sit wamal
9	wamal	šašib	?on	ničim wamal
10	čin?ak', (u)	šašib, č'ič'ni?	?on, (u)	čikč'iš
11	wamal	č'ič'ni? šašib	?on	wamal
12	wamal	šašib	?on	wamal
13	cahal wamal	šašib, cahal	?on, sakil	?ala sakil wamal
14	cahal wamal	č'ič'ni?	?on	?ala ničim wamal
15	wamal, (u)	šašib, (u)	cic, (u)	wamal, (u)
16	-	šašib, bac'il	?on, bac'il	-
17	-	šašib, bac'il	?on	č'aal wamal
18	wamal	šašib, čahp	cic, bac'il	wamal, bac'il
19	paloma wamal	šašib, č'ič'ni?	?on	čahp wamal
20	-	šašib, č'ič'ni?	?onte?	cahal nič wamal
21	-	šašib, čahp	?on	-
22	yakan šporowok	šašib	?on	wamal
23	-	č'ič'ni? šašib	?on	-

	cahal lo?bal	pošil ši?wel	¢uhkum ?ak	šyaš ?ak
1	mancana lo?bal			?akil
2	cahal lo?bal			?ak
3	mancana lo?bal	wamal, wamalil	?ak	?ak, ?akil
4	lo?bal, (u)	wamal	?ala nič ?ak	?ala nič ?ak
5	cahal lo?bal			yašal ?ak
6	cahal lo?bal			?ak
7	cahal lo?bal			wamal
8	cahal lo?bal	-	?ak, čahp	?ak
9	cahal lo?bal			?ak
10	cahal lo?bal	-	sibal ?ak	?ak
11	cahal lo?bal			č'in ?ak
12	cahal lo?bal	?ala č'aben	wamal	?ak
13	cahal lo?bal	?ala sakil wamal	sakil wamal	?ihk'al wamal
14	cahal lo?bal	šašib	?ak, cococ	?ak
15	lo?bal, (u)	pošil ši?wel,(u)	?ak, wamal, (u)	?ak, wamal,(u)
16	cahal lo?bal	-	?ak, bac'il	?ak, bac'il
17	cahal lo?bal		-	?ak, čahp
18	cahal lo?bal	šašib, čahp	wamal, čahp	wamal
19	cahal lo?bal	špošil ši?wel	čahp ?ak, pečpeč	?ak, tutin
20	cahal lo?bal	pošil ši?wel	?alanič ?akatik	?ala nič ?ak
21	cahal lo?bal	pošil ši?wel	-	?ak, ?ala čahp
22	cahal lo?bal			?ak,(u), yaš?ak
23	cahal lo?bal		?ak	?ak, pecpec

	pirimahk'	čikč'iš	yat c'i? wamal	tuht
1	we?el t'ul	cahal č'iš	cahalte?	(u)
2	we?el t'ul, (u)	č'iš	špošil č'uhtil	wamal, ?ac'amte?
3	swe?el t'ul	wamal	wamal	wamal
4	č'iš, č'ište?	wamal	wamal	wamal
5	we?el t'ul	čikč'iš	cah šnič wamal	(u)
6	(u), pirimahk'	č'iš	ničimetik	(u)
7	pirimahk'	č'iš	wamal	wamal
8	we?el t'ul	č'iš	wamal, čahp	wamal
9	-	č'iš	-	(u)
10	we?el t'ul, (u)	čikč'iš	-	tuht
11	pirimak'	čikč'iš	cahal wamal	-
12	we?el t'ul	čikč'iš	te?	wamal
13	sakil wamal	č'iš, sakil	cahal wamal	sakil wamal
14	primahk'	č'iš	bot'?at wamal	coc?isim wamal
15	we?el t'ul, (u)	č'iš, te?,(u)	te?	tuht wamal, (u)
16	pirma nahk'	čikč'iš	-	-
17	(u), pirimahk'	bac'il č'iš	cahal ničim wamal	c'ahelal wamal
18	prima nahk', (u)	č'iš, čahp	te?, čahp	wamal, čahp
19	pirimahk'	čikč'iš	čahp wamal	tuht
20	primahk'	čikč'iš	-	tuht
21	prima nahk'	čikč'iš	-	tuht
22	prima nahk'	čikč'iš	cahalte?	tuht
23	pirimahk'	čikč'iš	yat c'i?	-

	mumun	balank'in	čahp ?ak	conlum	cuy
1	mumun	wamal, mancana	?ak, č'išč'iš	?ak, wamal	
2	mumun	sun	?ak, (u)	wamal, (u)	
3	wamal	wamal	?ak	?ak	te?
4	mumun	wamal	?ala ?aketik	č'uhč'ul ?ak	te?, (u)
5	mumun	č'ahkil	čahp ?ak	ča?amuč	cuy
6	mumun	-	?ak	-	cuy
7	mumun	č'ahkil	čahp ?ak	?ak	
8	(u)	wamal	?ak, čahp	(u)	te?
9	mumuy	č'ahkil	?ak	caca lum	
10	mumun,kašlan	balank'in	čahp ?ak	-	te?
11	mumun	čahp wamal,(u)	čahp ?ak	conte?	cuy
12	mumun	č'ahkil	cuhkum ?ak	-	cuy
13	sakilcahal w.	sakilcahal wamal	?alasakil wamal	conte?,sakil	sakilwamal
14	mumun	č'ahkil	?ak, cahal	-	cuy
15	wamal, (u)	wamal,te?,(u)	?ala wamal, (u)	yisim ?ak	cuy, (u)
16	mumun, bac'il	č'ahkil, bac'il	?ak, bac'il	-	cuy
17	mumun	č'ahkil	?ak, čahp	-	č'ahkil
18	wamal, mumun	č'ahkil, te?	?ak, čahp	-	cuy,bac'il
19	mumun	balank'in	?ak, tutin	conte?etik	cuy
20	mumun, bac'il	k'in	?ala čahp ?ak	?ala conte?	cuy
21	mumun	wohčol?akan w.	?ak, cuhkum	contealumilal	cuy
22	mumun	balank'in	čahp ?ak	ča?amuč	
23	mumun	balamtun	čahp ?ak	-	

	k'anču? wamal	tunim čih wamal	čenek' mut	pečeč ?ak
1	wamal	wamal, mancana	celel	?ak, mancana
2	-	(u)	čenek' mut	(u), ?ak
3	wamal	wamal	wamal	?ak
4	wamal	wamal	(u), wamalil	?ala ?aketik
5	sakil nič	(u)	čenek' mut	yašal ?ak, (u)
6	?ala ničimetik	(u)	ščenek' mut	?ak
7	wamal	bac'il wamal	nič wamal	?ak
8	(u)	wamal	(u),sak'al čenek'	čahp ?ak
9	-	-	-	?ak
10	-	-	ščenek' mut	-
11	sakil wamal	yitah čih	pošil howil c'i?	čahp ?ak
12	wamal	wamal	-	wamal
13	sakilcahal wamal	sakil wamal	sakil wamal	sakil wamal
14	pošil čin	?ala ničim	čenek' mut	pecpec ?ak
15	wamal, te?, (u)	te?, (u)	?ak', (u)	?ak, wamal
16	-	-	petumaš, bac'il	?ak, bac'il
17	pohowil wamal	sbok čitam	sit holomaš	čahp ?ak
18	wamal, čahp	wamal, čahp	-	wamal, čahp
19	čahp wamal, (u)	yitah čih	čenek' mut	pehčil ?ak
20	-	-	čenek' mut	čahp ?ak
21	-	yuskum čih	ščenek hohmut,(u)	pečpeč ?ak
22	sakil nič wamal	yuskum čih	čenek' mut	nehči ?ak,sa?ak
23	pohowil wamal	yuskum čih	čenek' mut	pecpec ?ak

	sak munas te?	k'uš balil šašib	?ahoh	cahalči?in nič wamal
1	te?, šašib	šašib, muk'ul šašib	tutin k'eweš	
2	sak munaste?	cahal šašib	ha?as	
3	wamal	šašib	wamal	wamal
4	te?	šašib, (u)	wamal	wamal
5	sitit	k'ante?	socsoctik	
6	sitit	šašib, paka?	ha?as	
7	mumuste?	mamal te?	-	
8	mumuste?	te?	wamal,sak'al	wamal, cah
9	sak munaste?	šašib	ha?as	
10	-	paka?, (u)	-	-
11	sak munaste?	šašib, (u)	hoh, (u)	
12	sak munaste?	šašib	ha?as	wamal
13	sak munaste?	šašib, sakil	cahal wamal	sakilte?
14	sak munaste?	šašib, (u)	cahal wamal	h?ob
15	te?, (u)	šašib, bac'il, (u)	ha?as, (u)	ščenek' mut, (u)
16	sak munaste?	šašib, bac'il	-	-
17	sik munaste?	paka?, šašib,bac'il	-	
18	sak munaste?	šašib	wamal, čahp	wamal
19	sitit,sakmunaste?	te?tikil šašib	?ahoh	čahp wamal, cahalnič
20	sak munaste?	šašib, bac'il šašib	?ahoh	-
21	sak munaste?	k'uš balil šašib	?ahoh	
22	sak bahte?	šašib, bac'il	?ahoh	
23	sak munaste?	bac'il šašib	?ahoh	

	č'oliw	yašal cib	č'ahkil	pomte?	kamare ?ak
1	swe?el t'ul		te?	te?	wamal, moro
2	pirimahk',(u)		sun	sakmunaste?	?ak, (u)
3	we?el t'ul	wamal	čiilte?	wamal	?ak
4	wamal	wamal	č'ahkil,(u)	wamal	?ak
5	č'oliw		č'ahkil	wolahtik	sibal ?ak
6	č'oliw		č'ahkil	-	?ak
7	č'oliw		pirimahk'	wamal	halal
8	wamal	-	wamal	wamal	?ak
9	-		č'ahkil	ničim	-
10	(u), č'oliw	-	č'ahkil	-	?ak, (u)
11	č'oliw		čikinib,(u)	te?, (u)	?ak, (u)
12	č'oliw	wamal	sun	te?	wamal
13	sakil wamal	sakilte?	sakilte?	sakilte?	sakil wamal
14	č'oliw	-	č'ahkil	šakšakte?	?ak
15	swe?el t'ul	wamal, (u)	č'ahkil	te?, wamal	?ak, wamal
16	č'oliw	-	sun, bac'il	-	?ak, bac'il
17	č'oliw	c'ahelal wamal	č'ahkil	hochoc wamal	?ak, sibakul
18	č'oliw	wamal, čahp	č'ahkil	wamal, čahp	?ak, čahp
19	č'oliw	čahp wamal	č'ahkil	čahp wamal	?ak, nahtil
20	č'oliw	-	č'ahkil	-	-
21	č'oliw	-	č'ahkil	sbakelhmečun	-
22	č'oliw		č'ahkil	cococ wamal	-
23	č'oliw		č'ahkil	-	sakaton

	č'opak	šbohtil čenek'	wale?te? poš	bac'il halal
1	cahal wamal		pahal wamal	halal
2	?ac'amte?		pahal wamal	halal, (u)
3	wamal	wamal	wamal	halal
4	wamal	čenek', (u)	pahal wamal	halal
5	tok'oy	čenek' howil c'i?	pahal ?ul	bac'il halal
6	-	-	pahal wamal	halal
7	-	čenek', ču?il	(u)	bac'il halal
8	č'opak	čenek', ču?il	wamal, čahp	halal
9	č'oh kak	čakanič	pah	halal
10	we?el t'ul	čenek', šču?il	-	halal, (u)
11	č'opak	šbohtil čenek'	pahal wamal	halal, (u)
12	č'opak	šču?il čenek'	pahal wamal	halal
13	cahal te?	šmoil čenek'	pahal wamal	halal, sakil
14	č'opak	šču?il	pahal wamal	halal
15	te?, wamal	šbohtil čenek'	pahal wamal,(u)	halal, (u)
16	č'opak, bac'il	čenek', bac'il	-	halal, bac'il
17	č'aal wamal	čenek', bac'il	pahal wamal	bac'il halal
18	č'opak, čahp	čenek', bac'il	pahal wamal	halal, bac'il
19	čahp wamal	šču?il, šbohtil	pahal wamal	halal, nahtil
20	-	čenek', šču?il	pahal wamal	halal
21	č'opak, kašlan	šbohtil čenek'	pahal wamal	bac'il halal
22	č'opak	šbohtil čenek'	pahal wamal	halal, bac'il
23	-	šbohtil	pahal wamal	halal

	?ič'ote?	lamte?	cu?um	bac'il tah
1	cahal te?		wamal	tah, cahal
2	-		?ak, (u)	tah, (u)
3	č'ič'ni?		?ak	tah
4	te?	wamal	halal	tah
5	yaš ?okinte?		sibal ?ak	bac'il tah
6	-		halal	tah, (u)
7	bac'il te?		-	bac'il tah
8	wamal,te?,čahp		wamal,?ak, čahp	tah, čahp
9	?iw	-	-	tah
10	-	-	?ak, (u)	tah, k'isis
11	sak'al te?		tunim ?ak	bac'il tah
12	te?	wamal	?ak	tah
13	cahal wamal	sakil wamal	sakil wamal	tah, sakil
14	-	č'ulul wamal	cu?um	tah
15	te?, (u)	wamal	halal, (u)	tah, k'isis
16	-	-	?ak, bac'il	tah, bac'il
17	či?ilte?		halal, čahp	bac'il tah
18	te?, čahp	wamal, čahp	?ak, čahp	tah, bac'il
19	čahp te?		?ak, nahtil ?ak	bac'il tah
20	čihilte?	tuhk'alte?	k'an ta halal	bac'il tah
21	-		-	bac'il tah
22	-		cu?um	bac'il tah
23	-		sakaton	bac'il tah

	cahal k'am?ak'	wet wamal	ha?aste?	yaš ?okinte?	bakte? sun
1		cahal wamal	te?	te?	te?
2		-	bac'il ?on	-	č'ahkil
3	wamal	wamal	te?	wamal	wamal
4	čin?ak'	wamal	wamalte?	wamal	wamal
5		(u)	ca?hihte?	k'eweš	tuhk'alte?
6	-	-	hihte?	ščenek' mut	(u)
7		(u)	-	te?	čahp te?
8	?ala wamal	wamal	sitit	sitit	wamal, sakil
9		-	?iw	-	tuhk'alte?
10	-	-	-	hihte?, (u)	(u)
11		cahal wamal	čikinib	k'ante?	čahp wamal, (u)
12	-	te?	te?	sc'elel	te?
13	cahal wamal	cahal wamal	hihte?, sakil	sakil te?	sakil wamal
14	pošil šohk	(u)	hihte?	-	tuhk'alte?
15	-	te?, (u)	te?, (u)	te?, (u)	wamal,te?,(u)
16	-	-	-	?ac'amte?	-
17	šnič č'iš	(u)	hihte?	-	č'ahkil
18	-	ničim	-	te?, čahp	te?, wamal
19	cahal k'am?ak'	pošil ?obal	hihte?	c'elel	č'ahkil
20	k'am?ak'	-	čikinib	kok, čalum	pišoničim
21	moen č'o	č'il wet	?onte?	yaš ?okinte?	pišol nič
22		wet wamal	?ac'amte?	-	tuhk'alte?
23		-	-	-	-

	tumat wamal	yehk'eč šuš	mol	pah?ul?ul wamal
1	wamal	te?	te?, tutin	
2	ste?el tumat	k'ante?, (u)	(u)	(u)
3	wamal	wamal	te?	wamal
4		wamal	wamal	wamal
5	(u)	cahal k'ante?	(u)	čikč'iš
6	tumat	č'iš, čahp	mol	-
7	nič wamal	k'ante?	te?	
8		te?, čahp	te?	wamal
9	tomut	k'ante?,k'anč'iš	-	
10		yehk'eč šuš	-	-
11	wamal, (u)	wamal, (u)	cococ wamal	pahal ?ul
12		-	wamal	pahal wamal
13		č'iš, sakil	cacames,sakil	cahal wamal
14		č'iš	mol	-
15		č'iš, (u)	mol	(u), te?
16		č'iš, činč'iš	mol	-
17	(u)	yehk'eč šuš	(u)	ste?el tahtam
18		č'iš, čahp č'iš	mes, cacames	-
19	čahp te?	yehk'eč šuš	mol	čahp wamal
20		yakan šuš	-	-
21	-	yehk'eč šuš	mol	-
22	-	mahkuč	mol	pah?ul?ul wamal
23	-	yehk'eč šuš	mol	-

	bac'il makum	smayil čan	cic	tinta wamal	k'abščohte?
1	bac'il makum		te?, hihte?		
2	č'iš, makum	čin?ak'	?on, bac'il		
3	makum	čin?ak'	te?		wamal
4	(u)	?ala wamal	te?	wamal	wamal
5	pahal makum		-		
6	makum, (u)	čin?ak'	?on		-
7	bac'il makum,(u)		cic		
8	makum, čahp	wamal	cic, cic?on	wamal	wamal,?ahate?
9	-		?iw		-
10	makum, ?ihk'ik	smayil čan	hihte?, ca?	šinte?	-
11	makum, (u)	pošil čin	cic		wamal, č'in
12	mahkum	-	cic	wamal	k'anta?ahate?
13	sahalum	sakil wamal	?on, sakil	sakil wamal	sakil wamal
14	makum	tumat č'o	cic	-	-
15	č'iš, (u)	?ak', (u)	mamal cic	wamal, te?	wamal, te?
16	č'išal makum	čin?ak'	?on, bac'il	-	-
17	bac'il makum	čin?ak'	?on		-
18	č'iš, čahp		hihte?, cic	wamal,čahp	wamal, čahp
19	makum	šč'omate?č'o	?on, muk'ul		tuhk'alte?
20	makum	šč'omate?č'o	ca?mut te?	č'aal wamal	šyaš?okinte?
21	bac'il makum	yašal wamal	cic		tuhk'alte?
22	makum, cahal		cic		
23	makum, bac'il	mayil čin?ak'	cic		-

	snabute? čil	sun	cib	šč'uč'il ha?ben
1		te?, sunulte?	tutin wamal	lo?bal, wamal
2		sun	(u)	šč'uč' ha?ben
3	te?	te?	wamal	wamal
4	te?	wamal	wamal	wamal
5		sun	cemen	šč'uč'il ha?ben
6	šč'ahkil	č'ahkil	-	wolahtik
7		čahp te?	wamal	?eč'
8	te?, čahp	te?, čahp	wamal, čahp	?eč', čahp
9		-	-	nič ?uč, š?ek
10	-	sun, (u)	cib, ?ihk'al	šč'uč'il ha?ben
11	(u), tulanilte?	cahal wamal,(u)	cib	šč'uč'il ha?ben
12	te?	sun	cib	ničim
13	sakil wamal	sakil wamal	cahal wamal	šč'uč'il ha?ben
14	tuhk'alte?	sun	-	?ala ničim
15	tuhk'alte?	sun	cib	šč'uč'il ha?ben, (u)
16	-	sun	-	k'anta ya?benal lo?bal
17	(u)	č'ahkil	-	šč'uč'il ha?ben
18	te?, čahp	sun, bac'il	cib, bac'il	šč'uč' ha?ben
19	nahtil wamal	č'ahkil, sun	cib	šč'uč'il ha?ben
20	-	sun	cib	šuč'il ha?ben
21	baksun	sun	cib	šč'uč'il ha?ben
22		sun	cib	šč'uč'il ha?ben
23	-	sun	cib	šč'uč'il ha?ben

	?ahate?	č'uhč'ul c'eman	c'elel	bac'il kok
1	te?, ?ahate?	wamal	te?	kokte?
2	?ahate?	?ak	kok	c'elel
3	wamal	?ak	kok	kok
4	te?	?ala ?aketik	kok	kok
5	?ahate?	lum šk'ub	-	kok
6	?ahate?	(u)	c'elel	kok
7	?ahate?	wamal, ?ak	c'elel	bac'il kok
8	?ahate?	wamal, čahp	c'elel	c'elel, kok
9	?ahate?	-	-	kok
10	?ahate?	c'eman, sakil	c'elel, (u)	c'elel
11	?ahate?	lom sp'ol	c'elel, (u)	kok, (u)
12	?ahate?	wamal	sc'elel	kok
13	?ahate?	sakil wamal	c'elel, sakil	c'elel, sakil
14	?ahate?	-	c'elel	kok
15	?ahate?, (u)	wamal	kok, (u)	kok, (u)
16	?ahate?	-	kok, c'elel	kok, bac'il
17	?ahate?	čahp ?ak	c'elel	kok, bac'il
18	?ahate?, bac'il	-	kok, čahp	kok, bac'il
19	?ahate?	c'eman, č'uhč'ul	kok, c'elel	kok
20	?ahate?	-	c'elel	kok, čalum
21	?ahate?	c'eman, yašal	kok, c'elel	bac'il kok
22	?ahate?	bac'il c'eman	c'elel	kok
23	?ahate?	c'eman, sakil	kok	kok

	tunim čih?ak'	yoy	bac'il c'eman	sabal c'unun
1	wamal		cahal wamal	wamal
2	(u)			sabal c'unun
3	te?		wamal	wamal
4	wamal	?aketik	te?	wamal
5	šuč'il te?		bac'il c'eman	cahal ničim
6	(u), (u)		(u)	sabal c'unun
7	-		cahal wamal	wamal
8	wamal, čahp		wamal, čahp	(u)
9	bat		c'eman	nič wamal
10	yak'ul pehc'	ca?ak	c'eman, cahal	-
11	?ak', (u)		cahal wamal	čahp wamal
12	yak'ul pehc'	wamal	wamal	sabal c'unun
13	cahal wamal	sakil wamal	cahal wamal	cahal wamal
14	-	?iw, (u)	čin?ak',cahal wamal	sun
15	te?, (u)	wamal, (u)	wamal, (u)	te?, (u)
16	-	-	-	-
17	?ak', bac'il		-	sun
18	?ak', čahp	wamal, čahp	c'eman, bac'il	wamal
19	?ak', čahp		c'eman, nahtil	sabal c'unun
20	pehc'ul ?ak'	borboš č'ahk	sc'eman	sabal c'unun
21	yak'ul pehc'		cahal c'eman	sabal c'unun
22	-		muk'ul c'eman	sabal c'unun
23	tahtam, mol		cahal c'eman	sabal c'unun

	pišol nič	karawanco	?ičil ?ak'	halate? cop
1		karawanco	wamal	wamal
2	-	karawanco	-	-
3	wamal	karawanco	te?	wamal
4	wamal	wamal	wamal	wamal
5		karawanco	nič mahtas	lom toh te?
6	wolahtik	karawanco	yak'ul c'usub	(u)
7		karawanco	nič wamal	nič wamal
8	te?, bac'il	karawanco	wamal, čahp	te?, čahp
9		karawanco	-	?iw
10	-	karawanco, (u)	-	-
11	čikinib, (u)	karawanco	pošil čin	č'in te?
12	-	karawanco	pahalsok c'usub	cop
13	yašal wamal	karawanco	k'anal wamal	yašal te?
14	-	karawanco	?ak'	-
15	te?, (u)	karawanco, (u)	?ak', (u)	te?, (u)
16	-	karawanco	-	-
17	c'eman wamal	karawanco	-	-
18	wamal, čahp	karawanco	wamal, bac'il	wamal, čahp
19	čahp wamal	karawanco	yak'ul lohcop	čahp te?
20	-	karawanco	-	-
21	-	karawanco	muk'ul čin?ak'	-
22		karawanco	-	-
23	sakil wamal	karawanco	čin?ak'mut,k'am	-

	c'usub	č'išitah	topakte?	takin č'iel	sakil c'eman
1	te?	č'iš bok		te?	-
2	sahalum, (u)	-		-	?ak'
3	wamal	bok		wamal	wamal
4	wamal		te?	wamal	wamal
5	yehk'eč mut	č'išitah		mol	(u)
6	c'usub	č'išitah		č'iš	(u)
7	-			-	wamal
8	-, makum,wamal		wamal, čahp	te?, čahp	(u)
9	-			-	-
10	c'usub, (u)		-	-	-
11	c'usub	č'išitah		takin č'iel	(u), (u)
12	c'usub		-	te?	-
13	k'anal wamal		yašal te?	k'anal wamal	yašal wamal
14	c'usub		-	sante?	-
15	c'usub, (u)		te?, (u)	te?, (u)	(u), (u)
16	čin?ak', bac'il		-	-	-
17	c'usub	č'išitah		-	čahp wamal,(u)
18	c'usub, bac'il		wamal, čahp	wamal, bac'il	c'eman, čahp
19	c'usub	č'išitah	tuhk'alte?	takin č'iel	c'eman, cahal
20	c'usub		-	šyaš [illegible]	c'eman
21	c'usub	č'išitah		takin č'iel	yihil c'eman
22	c'usub			-	c'uc'ep
23	c'usub	č'išitah		takin č'iel	sakil c'eman

	cop	k'anal nič wamal	k'an ?ak	?uč'imte?
1	wamal		?akil	
2	-		?ak, (u)	
3	wamal	wamal	?ak	te?
4	wamal	wamal	?ak	wamal
5	tok'oy		bac'il ?ak	
6	-	-	?ak, čahp	-
7	te?	wamal, čahp	čahp ?ak	
8	wamal	wamal, čahp	?ak, čahp	wamal
9	-		?ak	
10	cop, (u)	-	?ak, čahp	-
11	(u), te?		?ak, čahp ?ak	?uč'imte?
12	-	(u)	?ak	wamal
13	sakil wamal	yašal wamal	k'anal wamal	k'anal wamal
14	cop	?ala ničim	?ak	-
15	te?, (u)	(u)	?ak, (u)	wamal, (u)
16	-	-	?ak	-
17	-	takin č'iel	?ak, (u)	-
18	cop, bac'il	wamal, bac'il	?ak, bac'il	wamal, bac'il
19	cop	čahp wamal	nahtil ?ak	čahp wamal
20	cop	-	?ak, sibal	-
21	cop	-	?ak, bac'il	?uč'imte?
22	cop		?ak, nehči	
23	cop		?ak, pecpec	

	?uhkum	kurus ?eč'	?eč'	šuč' nič	cahal cib
1	cahal te?	wamal	wamal		
2	sahalum	?eč', (u)	?eč'		
3	te?	wamal	wamal	wamal	wamal
4	wamal	wamal	wamal	wamal	wamal
5	-	cahal ?eč'	?eč'		
6	-	?ek'	?ek'		
7	?uhkum	čahp wamal	čahp wamal		
8	?uhkum	cahal wamal	wamal,čahp	wamal,čahp	wamal, čahp
9	sitit	yeč'	yeč'		
10	-	?eč', cahal	sakil ?eč'	-	-
11	?uhkum	?eč', (u)	ničim		
12	te?, (u)	-	-	wamal	wamal
13	yašal wamal	cahal wamal	cahal wamal	cahal wamal	yašal wamal
14	-	?eč'	sisim ?eč'	-	-
15	te?, (u)	?eč', (u)	?eč'	wamal, (u)	(u)
16	-	?eč', bac'il	-	-	-
17	-	?ek'	-	-	-
18	bac'il ?uhkum	?eč', bac'il	čahp ?eč'	?alaničim	wamal, čahp
19	?uhkum	?eč', cahal	sakil ?eč'	čahp wamal	čahp wamal
20	?uhkum	-	-	-	k'anta cib
21	?uhkum	?eč', cahal	č'in ?eč'	-	čahp cib
22	?uhkum	pehkeč ?eč'	?eč'		
23	?uhkum	-	-		

	nitem k'ahk'	sibal ?ak	šwiš ?uskum	mahtas	mustisa
1		-	wamal	mahtas	
2		?ak, (u)		mahtas	
3		?ak	wamal	bok, mahtas	bok, mustisa
4	?ala wamal	?ak	wamal	wamal	bok, mustisa
5		sibal ?ak		mahtas	
6	wamal	-	ničimetik	mahtas	sakil bok
7	wamal	?ak, čahp			
8	wamal, čahp	?ak, čahp		tahtam	bok, bac'il
9	mahtas	sirum ?ak			
10	-	sibal ?ak	-	mahtas, (u)	mustisa
11		sibal ?ak	wamal	mahtas	mustisa
12	wamal	sibal ?ak	wamal	?uskum	smustisa
13	sakil wamal	yašal wamal	cahal wamal	mahtas	mustisa
14	špošil lohc'op	sibal ?ak	ničim	mahtas	mustisa
15	wamal, (u)	?ak, (u)	wamal, (u)	mahtas, (u)	šnič bok,(u)
16	-	?ak, bac'il	-	mahtas	smustisa
17		?ak, bac'il	-	mahtas	mustisa
18	wamal, čahp	sibal ?ak	ničim, čahp	-	mustisa
19	kulantu čitam	sibanil ?ak	čahp wamal	mahtas	mustisa
20	sbok čitam	sibakil ?ak	-	mahtas	mustisa
21		sibal ?ak	k'unil wamal	mahtas	mustisa
22				mahtas	
23		sibal ?ak		mahtas	

	?uskum	tuhk'ulum č'iš	botbot wamal	tok'oy	čiilte?
1	-	-		tok'oy	wamal
2	?uskum	šč'iš, (u)		cop	pirimahk'
3	?uskum	wamal		tulesna	čiilte?
4	wamal	wamal	wamal	wamal	wamal
5	?uhkum	čikč'iš		tok'oy	čiilte?
6	?uskum	č'iš, čahp		sakilte?	č'ahkil
7	-	č'iš te?		k'ante?	
8	bok, čahp	č'iš, čahp	wamal	k'ante?, (u)	wamal, čahp
9	-	čikč'iš		tok'oy	
10	?uskum, (u)	-	-	tok'oy, (u)	čiilte?, sakil
11	?uskum	šč'išal wamal, (u)		tok'ow	-
12	?uskum	te?	?ala ničim	-	te?
13	yašalwamal	č'iš	cahal wamal	yašte?	yašte?
14	?uskum	č'iš	?ala ničim	sakte?	sinte?,(u)
15	?uskum	wamal, (u)	(u)	tok'oy, (u)	č'ahkil,(u)
16	?uskum	čikč'iš	-	-	
17	?uskum	č'iš, bac'il		štok'oy	čiilte?
18	-	č'iš, čahp	ničim, čahp	-	-
19	?uskum	tuhk'ulum č'iš		tok'ob	čihilte?
20	?uskum	čih č'iš	?ala ničim	tok'oy	č'ahkil
21	?uskum	tuhk'ulum č'iš		tok'oy	čiilte?
22	?uskum	tuhk'ulum č'iš		štok'oy	
23	?uskum	-		tok'oy	čihilte?

	k'u čič	bac'il c'inte?	kašlan c'inte?	cahal c'inte?
1	?ak	cahal c'inte?	c'inte?	cahal c'inte?
2	?ak, (u)	c'inte?	c'inte?, (u)	c'inte?, (u)
3	?ak	c'inte?	c'inte?	c'inte?, cah
4	?ak	wamal	wamal	wamal
5	yaš ?ak	sakal c'inte?	sakil c'inte?	cahal c'inte?
6	?ak, čahp	c'inte?, bac'il	c'inte?, bac'il	c'inte?, bac'il
7		bac'il c'inte?	bac'il c'inte?	kašlan c'inte?
8	?ak, čahp	c'inte?, sakil	c'inte?, sakil	cahal c'inte?
9		c'inte?	bac'il c'inte?	c'inte? h?ihk'al
10		c'inte?, sakil	sakil c'inte?	cahal c'inte?
11	tutin ?ak, (u)	c'inte?, cahal	c'inte?, sakil	cahal c'inte?
12	?ala ?ak	c'inte?	c'inte?	c'inte?
13	k'anal wamal	c'inte?, sakil	sakil c'inte?	cahal c'inte?
14	?alaničim ?ak	c'inte?	c'inte?	cahal c'inte?
15	?ak, (u)	c'inte?, (u)	c'inte?, (u)	c'inte?, (u)
16	?ak, bac'il	c'inte?, bac'il	bac'il c'inte?	bac'il c'inte?
17	?ak	čahp c'inte?	bac'il c'inte?	c'inte?, cahal
18	?ak, čahp	c'inte?, bac'il	c'inte?, bac'il	c'inte?, bac'il
19	?ak, ?ala tutin	c'inte?, sakil	sakil c'inte?	cahal c'inte?
20	?ak	c'inte?	c'inte?	bac'il c'inte?
21	k'unil ?ak	cahal c'inte?	c'inte?, sakil	cahal c'inte?
22		bac'il c'inte?	sakil c'inte?	cahal c'inte?
23	?ak, č'et	c'inte?, bac'il	sakil c'inte?	cahal c'inte?

	cahal či?in	sakil cahal či?in	pahal mac' či?in
1	cahal či?in	yašal či?in	cahal či?in
2	-	čin?ak'	či?in, (u)
3	bok, wamal	čin?ak'	či?in
4	wamal	wamal	či?in
5	cahal či?in	sakil cahal či?in	pih čitam
6	cahal či?in	sakil či?in	či?in
7	bac'il či?in	sakil či?in	čitam
8	cahal či?in	sakil či?in	či?in, čahp
9	či?in	či?in, sakil	či?in
10	či?in, sakil,(u)	sakil či?in	či?in, pahal mac'
11	cahal či?in	sakil cahal či?in	či?in, (u)
12	čin?ak', či?in	cahal či?in	pahal mac' či?in
13	cahal či?in	cahal či?in	či?in
14	cahal či?in	cahal či?in	sak'al či?in, pahal mac'
15	cahal či?in	cahal či?in	či?in, (u)
16	?is?ak' či?in	bac'il či?in	pahal mac' či?in
17	cahal či?in	sakil cahal či?in	či?in, bac'il či?in
18	cahal či?in	cahal či?in	pahal mac' či?in
19	cahal či?in	sakil či?in	pahal mac' či?in
20	cahal či?in	cahal či?in	či?in, pahal mac'
21	cahal či?in	sakil cahal či?in	pahal mac' či?in
22	cahal či?in	sakil cahal či?in	pahal mac'
23	cahal či?in	sakil či?in	pahal mac' či?in

	petrona wale?	č'omate?	k'ahk'al lo?bal	kinya lo?bal
1	wale?	č'omate?	lo?bal, mancana	mancana lo?bal
2	wale?, (u)	č'omate?	?ik'os	?ik'os, mancana
3	wale?	č'omate?	lo?bal	mancana lo?bal
4	wale?, (u)	č'omate?	lo?bal	lo?bal
5	petrona wale?	č'omate?	mancana lo?bal	kinya lo?bal
6	petrona wale?	č'omate?	sakil lo?bal	mancana, kinya
7	petrona wale?	č'omate?	bac'il lo?bal	sera lo?bal
8	wale?, bac'il	č'omate?	mancana lo?bal	cahal lo?bal
9	petrona wale?	č'omate?		maču lo?bal
10	wale?, petrona	č'omate?	lo?bal, mancana	lo?bal, ?ik'os
11	cahal wale?	č'omate?	yik'os lo?bal	kinya lo?bal
12	k'anal wale?	č'omate?	sakil lo?bal	sakil lo?bal
13	wale?, sakil	č'omate?	mancana lo?bal	maču lo?bal
14	petrona wale?	č'omate?	lo?bal, sera	kinya
15	wale?, (u)	č'omate?	lo?bal, (u)	lo?bal, (u)
16	wale?, bac'il	č'omate?	lo?bal, bac'il	lo?bal, mancana
17	bac'il wale?	č'omate?	mancana lo?bal	kinya
18	wale?, sakil	č'omate?	sakil lo?bal	kinya lo?bal
19	petrona wale?	č'omate?	bac'il lo?bal	kinya lo?bal
20	wale?, bac'il	č'omate?	lo?bal, mancana	k'ahk'al lo?bal
21	wale?, petrona	č'omate?	čahp lo?bal	kinya
22	mehikano wale?	č'omate?	serena lo?bal	kinya lo?bal
23	č'iš wale?,petrona	č'omate?	tonton lo?bal	kinya

	yihk'acte?	kuliš ?ek'	pimil c'eman	ca?ak	hot'ben cawen
1	yihk'acte?el		c'eman, sakil	?ak	cacalmes
2	čin?ak'		wamal	?ak	č'ič'ni?
3	wamal		wamal	?ak	šašib,č'ič'ni?
4	wamal	wamal	wamal	?ak	wamal
5	yihk'acte?	'	čahp wamal	ca?ak	čikč'iš
6	-		pošilme?ba,mahben	?ak, (u)	(u)
7	-	(u), (u)	wamal		č'iš
8	-	(u), (u)	wamal	?ak, čahp	hot'ben cawen
9	k'am?ak'		c'eman		
10	yihk'acte?	kuliš ?ek'	-	ca?ak	hot'ben cawen
11	yihk'acte?		(u), (u)	ca?ak	tahtam, (u)
12	sbislul	?ek'	pošil čamel	ca?ak	čikč'iš
13	yihk'acte?	yašal te?	yašal wamal	?akil	yašal č'iš
14	?ak'	kuliš ?ek'	pimil wamal	?ak, ca?ak	č'iš, tahtam
15	yihk'acte?el	te?, (u)	te?, (u)	?ak, (u)	č'iš, (u)
16	-	-	-	ca?ak	č'iš, bac'il
17	čin?ak'		pošil mahben	ca?ak	hot'ben cawen
18	-	-	-	?ak,cuhkum	čikč'iš
19	yihk'acte?	kuliš ?ek'	čahp mahben	ca?ak	hot'ben cawen
20	yihk'acte?	-	-	ca?ak	hot'ben cawen
21	yihk'acte?		pošil mahben	ca?ak	hot'ben cawen
22	yihk'acte?		-	ca?ak	hot'ben cawen
23	yihk'acte?		pošil mahben	ca?ak	cawen

	mayil	holomaš či?in	tim	či	bac'il k'ante?
1	č'um	či?in, pahal mac'	t'im	-	k'ante?, cahal
2	č'um	sak'al či?in	?eč'	č'iš	k'ante?, (u)
3	č'om, mayil	či?in	tin	tin	šašib
4	č'umate?	či?in, (u)	wamal	či?,(u)	te?
5	mayil	-	tim	či	bac'il k'ante?
6	č'um, mayil	či?in, sak'al	tim	(u), či	k'ante?, bac'il
7	mayil		tim	čih	bac'il k'ante?
8	č'om	či?in, čahp či?in	tim	či	k'ante?, čahp
9	mayil		či	či	k'ante?
10	mayil, (u)	či?in, sakil	tim, sakil	tim	k'ante?, cahal
11	č'um, mayil	či?in, (u)	tim	či, (u)	k'ante?, (u)
12	mayil	pahal mac' či?in	tim	či	k'ante?
13	č'um	či?in, yašal	sitim	či	k'ante?
14	č'um	spih ščitam	tim	či	k'ante?, yihil
15	č'um, (u)	či?in, (u)	tim, (u)	či, (u)	k'ante?, (u)
16	č'om, bac'il	či?in, pahal mac'	tim	či	k'ante?, bac'il
17	č'um, mayil	či?in, bac'il	tim	či	bac'il k'ante?
18	mayil	pahal mac' či?in	tim, čahp	či	k'ante?, bac'il
19	mayil	či?in, pahal mac'	tim	či	č'iš k'ante?
20	č'um	či?in, pahal mac'	tim	či	k'ante?
21	č'um, mayil	či?in, čahp	tim	či	č'iš k'ante?
22	mayil		tim	či	k'ante?
23	mayil	či?in, holomaš	tim	či	k'ante?, bac'il

	panyat wamal	pata	kuliš pimil	ca?tuluk'
1	ničim	pata	č'išč'iš bok	ca?tuluk'
2	pošil čin	pata	kuliš pimil	ca?tuluk'
3	wamal	pata	kuliš pimil	ca?tuluk'
4	wamal	pata	kuliš pimil	te?
5	šinal te?	pata	lom č'aik	ca?tuluk'
6	cuy	pata	(u), kuliš pimil	ca?tuluk'
7		pata		ca?tuluk'
8	wamal, čahp	pata	pimilwamal,pimil bok	ca?tuluk'
9		pata		ca?tuluk'
10	-	pata, cahal	kuliš pimil	ca?tuluk'
11	tunimte?	pata	bok, kuliš pimil	ca?tuluk'
12	(u)	pata	kuliš pimil	ca?tuluk'
13	cahal wamal	pata, sakil	yašal wamal	ca?tuluk'
14	ničim wamal	pata	kuliš pimil	ca?tuluk'
15	ničim, te?	pata, (u)	kuliš, č'išitah,(u)	ca?tuluk'
16	-	pata	kuliš pimil	ca?tuluk'
17	sakil niš wamal	pata	kuliš pimil	ca?tuluk'
18	ničim, čahp	pata	kuliš pimil	ca?tuluk'
19	čahp wamal, (u)	pata	kuliš pimil	ca?tuluk'
20	-	pata	kuliš pimil	ca?tuluk'
21	-	pata	kuliš pimil	ca?tuluk'
22	-	pata	kuliš pimil	ca?tuluk'
23	-	pata	kuliš pimil	ca?tuluk'

	p'uhk	paterna	kašlan kulantu	skulantu čitam
1	-	-	kulantu	wamal
2		kok	(u)	skulantu č'o
3	čin?ak'	kok	wamal	kulantu č'o
4	wamal	kok	kulantu	wamal
5	c'usub			kulantu čitam
6		kok	wena, (u)	skulentu čitam
7	wamal		wamal	wamal
8	wamal	partena	wamal	wamal
9		kok	-	
10	mayil čan	kok, (u)	kašlan kulantu	kulan[illegible]
11		kok, (u)	kulentu	čahp wamal,
12	p'uhk	kok	č'išč'iš kulantu	kulantu
13	sakil wamal	kok, yašal	kulantu, yašal	yašal wamal
14	čin?ak'	kok, (u)	kašlan kulantu	kulantu č'o
15	?ala ?ak'	kok, (u)	kulantu, (u)	kulantu, (u)
16	-	kok, bac'il	č'išč'iš kulantu	-
17	-	kok	kulentu, kašlan	sbokil čitam
18	čin?ak', čahp	kok, bac'il	kulantu, čahp	wamal, čahp
19	čin?ak', čahp	kok	kašlan kulantu	čahp kulantu, čitam
20	-	kok, čalum	kašlan kulantu	-
21	-	kok	č'iš kulantu	kulantu čitam
22		paterna	č'iš kulantu	skulantu čitam
23	p'uhk	kok, paterna	č'iš kulantu	kulantu čitam

	?oscel ?ak	bahk'el wamal	tilil ha?	ca?hihte?
1			tilil ha?	hihte?, k'a
2	?ak, (u)		-	hihte?, (u)
3	wamal	wamal, we?el t'ul	wamal	hihte?
4	?ak	wamal	tilil ha?, (u)	te?
5			tilil ha?	ca?hihte?
6	?ak, čahp	-	tilil ha?	hihte?, bac'il
7	?ak		wamal	bac'il hihte?
8	?ak, čahp ?ak	wamal, čahp	wamal	hihte?, čahp
9			te?	hihte?
10	-	-	tilil ha?, (u)	hihte?, ca?
11	čahp ?ak		tilil ha?, (u)	ca?hihte?
12	?ak	wamal	tilil ha?	hihte?
13	sakil wamal	yašal wamal	tilil ha?	hihte?
14	?ak	č'oliw, we?elt'ul	tilil ha?, (u)	hihte?
15	wamal, (u)	wamal	tilil ha?, (u)	hihte?, (u)
16	?ak, bac'il	-	tilil ha?	hihte?, bac'il
17	?ak, čahp	-	tilil ha?	hihte?, bac'il
18	wamal, bac'il	wamal, čahp	tilil ha?	hihte?, bac'il
19	?ak, čahp	čahp č'oliw	tilil ha?	ca?hihte?
20	-	-	tilil ha?	hihte?, ca?
21	-	-	tilil ha?	ca?hihte?
22			tilil ha?	ca?hihte?
23	čahp ?ak		tilil ha?	ca?hihte?

	mumunte?	nehči ?ak	yak' c'i?	?onte?
1	-	?ak, ?akil na		-
2	sahalum	?ak, (u)		-
3	wamal	?ak	wamal	?on
4	wamal	?ak	wamal	wamal
5	smumun kawayu	(u)		?iw
6	-	-, (u)	-	manko, ?on
7	te?	?ak		?on
8	te?	?ak, čahp ?ak	wamal, čahp	cic?on
9	-			?on
10	-	?akil, sibal?ak	-	?on, bac'il
11	te?, cahalte?	?ak, (u)		?on
12	mumun	nič ?ak	wamal	?on
13	yašal wamal	yašal ?ak	?ala yašal wamal	?on, sakil
14	-, pomte?	(u)	-	?on
15	te?, wamal	?ak, (u)	wamal, (u)	te?
16	-	?ak, bac'il	-	?on, bac'il
17	-	halaletik, (u)	-	?on
18	mumun, čahp	?ak, bac'il	wamal, čahp	cic, bac'il
19	mumunte?	?ak, muk'ul	čahp wamal	?onte?
20	smumun kawayu	?ak, bac'il	-	?onte?
21	mumunte?	?ak, bac'il	-	?onte?
22	smumun h?ihk'al	?ak, k'an		?onte?
23	mumunte?	sibal ?ak, bac'il		?on

	čin?ak' pošilca?nel	čahp či	kašlan pata	ni?šihč'
1		-	-	-
2	čin?ak'	či	-	-
3	čin?ak'	wamal	wamal	wamal
4	wamal	či, (u)	wamal	wamal
5		či		čahp ?a
6	čin?ak'	č'iš, čahp	tulesna	-
7		či		wamal, bac'il
8	wamal	či	ca?tuluk'	wamal
9				-
10	-	či	-	-
11	čin?ak', yihil	čahp či, (u)	manko	nahtil te?
12	čin?ak'	muk'ul či	te?	-
13	yašal wamal	či, sakil	sakil te?	k'anal te?
14	čin?ak'	či	?ac'amte?	-
15	?ak'	či, (u)	te?, (u)	wamal
16	-	-	-	-
17	-	čahp či	štok'oy	wamal
18	čin?ak', čahp	či, bac'il	te?, čahp	wamal, čahp
19	čahp wamal	č'išč'iš či	kašlan pata	šihč'
20	-	či	kašlan pata	-
21	-	čahp či	kašlan pata	-
22		met		č'iel ?ak'
23	?ala čin?ak'	komen, či	-	šihč'

	ca?tuluk'te?	?ihk'uyeh	?išimte?	yisim balam
1	-	-	-	te?, tutin
2	ca?tuluk'	č'iš, (u)	-	?ac'amte?
3	te?, ?on	te?, č'iš	wamal	wamal
4	wamal	wamal	wamal	wamal
5	pečahtik ste?el	čikč'iš	?on	yisim balam
6	hihte?	č'iš, čahp	hihte?	-, č'iht
7		č'iš, čahp	bac'il te?	č'iš te?
8	wamal	č'iš, čahp	te?, čahp	te?, čahp
9		čikč'iš		č'iš te?
10	-	-	-	č'iht
11	-	č'iš	čahpte?, nahtil	(u), yašal wamal
12	-	č'iš	te?	te?
13	sakil te?	k'anal sakilte?	sitim	sitit, k'analte?
14	-, ?uhkum	č'iš	-	-, č'iš
15	wamal	č'iš, (u)	te?	č'iš
16	-	č'iš, bac'il	-	č'iš, bac'il
17	-	čahp č'iš	te?il	č'iht
18	te?, čahp te?	č'iš, čahp	te?, čahp	te?, čahp
19	-	č'iš, nahtil	čahp te?	yisim balam
20	-	?ihk'uye	-	yisim balam
21	-, yašalte?	?ihk'uyeh	-	yisim balam
22	-	?ihk'uyeh	-	?isim balam
23	ca?tuluk'	-	-	č'iht

	k'ušben c'anan	sakil č'iht	čaniw	pihpih ?ak
1	-			?ak, (u)
2	cib			?ak
3	wamal	wamal	?ak	?ak
4	te?	wamal	wamal	?ak
5	(u)			sibal ?ak
6	(u)	č'iht, bac'il	-	?ak, bac'il
7	wamal	bac'ilte?		čahp ?ak
8	-	wamal, čahp	?ak, čahp	?ak, bac'il
9	-	-		-
10	-	č'iht, sakil	-	-
11	?uč'imte?	(u)	tok'ow	čahp ?ak
12	te?	hihte? yilel	?ak	?ak
13	yašal te?	yaš ?okinte?	sabal c'unun	?akil, yaš
14	we?el t'ul	č'ululyabenalte?	?ak, cococ?ak	(u)
15	te?	(u)	?ala halal	?ak, (u)
16	-	-	-	?ak, bac'il
17	hochoc wamal	č'iht, bac'il	-	(u)
18	te?, bac'il	sitit	?ak, čahp	čahp ?ak
19	čahp te?	č'iht, sakil	čanib	sibanil ?ak
20	-	-	-	?ak
21	-	č'iht, bac'il	-	pihpih ?ak
22	cococ wamal			sakaton
23	-			?ak, sibal

	čimol ?ak	nohk'oš ?ak'	cahal ?ak	ma?ču? lima
1	–	–	?ak	šč'išel?alčaš
2	?ak, (u)	cib	?ak, (u)	lima, bac'il
3	?ak	wamal	?ak	lima
4	?ak	wamal	?ak	te?el ?alčaš
5	pečahtik ?ak	lom čahp ?a	balahtik	kašlan lima
6	?ak, čahp	čahp wamal	čahp ?ak	?elemoneš
7	?ak		?ak	?alčaš
8	?ak, čahp	wamal, čahp	?ak, čahp	lima, cihil
9	sirum ?ak			ču?lima
10	?akil, sibal ?ak	nohk'oš ?ak'	?akil, (u)	lima, kašlan
11	(u)	lom sak'	čahp ?ak	?alčaš, lima,
12	?ak	cahal wamal	?ak	lima
13	pečpeč ?akil	yašal wamal	k'anal ?ak	lima, kašlan
14	čimol ?ak	?ak'čin	–	lima, kašlan
15	?ak	wamal, (u)	?ak, (u)	lima, (u)
16	?ak, bac'il	–	?ak, bac'il	lima, bac'il
17	?ak, čahp	–	?ak, bac'il	lima, bac'il
18	sibal ?ak	wamal, čahp	?ak, bac'il	lima, bac'il
19	pečpeč ?ak	nohk'oš ?ak'	?ak, cahal ?ak	lima, kašlan
20	?ak, čahp, (u)	–	?ak	lima, cihil
21	čimol ?ak	?ak'čin,nohk'oš ?ak'	–	kašlan lima
22	čir pok		nehči?ak, cahal	kašlan lima
23	we?el čimol ?ak	nohk'oš ?ak'	bac'il ?ak	kašlan lima

	?išim	sakaton	yakan k'ulub wamal	slok'omba tuht
1	k'ahben	halal, ?ak	wamal	–
2	k'ahben	?ak, bac'il		
3	k'ahben	?ak	wamal	?ak
4	k'altik	?aketik	wamal	wamal
5	k'ahben	sakilton, sakton	buluk'sit kawayu	
6	k'altik	tonton ?ak	pošil č'uht	–
7	k'ahben	?ak		
8	k'altik	?ak, čahp	wamal, čahp	wamal
9	k'ahben	cahton	–	
10	k'altik	?akiletik, čahp	–	?akil
11	k'ahben	sibal ?ak	čahp wamal	čahp wamal
12	k'altik	sakaton	yakan k'ulub wamal	wamal
13	k'altik	?ak, yaš	yašal wamal	yaš ?ak
14	?išim	?ak	(u)	?ak, (u)
15	k'altik	?ak, (u)	wamal, (u)	?ak
16	k'altik	sakaton	yakan k'ulub wamal	–
17	k'ahben	halal, čahp	yakan k'ulub	–
18	k'altik	sakaton	čahp wamal	čahp wamal
19	k'ahben	sakaton	k'ulub wamal	?ak, petpet ?ak
20	k'altik	–, sakaton	yakan k'ulub wamal	–
21	k'ahben	sakaton	yakan k'ulub	–
22	k'ahben	sakaton		
23	k'ahben	sakaton	yakan k'ulub	

	sot čan wamal	č'opak wamal	šanab mut wamal	kašlan čenek'
1	-	-	wamal	
2	ščihčun sbak'	kištab	pošil čin	kašlan čenek'
3	wamal	(u), (u)	wamal	kašlan čenek'
4	wamal	wamal	wamal	kašlan čenek'
5	čihčih ta čan	pehčatik yašbaht		kašlan čenek'
6	(u)	ničimetik	-	kašlan čenek'
7		nič wamal		kašlan čenek'
8	wamal, čahp	čahp wamal	pošil ?akan	kašlan čenek'
9		nič wamal		kašlan čenek'
10	-	-	-	kašlan čenek',sak
11	čahp wamal, (u)	wamalhuntač'opak'	čahp wamal	kašlan čenek'
12	wamal	?ala ničim	wamal	kašlan čenek',(u)
13	yašal wamal	yašal wamal	cahal wamal	kašlan čenek',yašal
14	čihčih wamal	?ala ničim		kašlan čenek',sakil
15	sot čan	wamal, (u)	wamal	kašlan čenek',(u)
16	-	-	-	kašlan čenek'
17	ščihčun	?ala cahal wamal	k'anal wamal	kašlan čenek'
18	wamal, čahp	?ala ničim, čahp	wamal, čahp	kašlan čenek'
19	sot čan	čahp wamal	cahal špurowok	kašlan čenek'
20	sot čan	?ala ničim, yaš	-	kašlan čenek',sak
21	-	-	-	kašlan čenek'
22	-, (u)	čihčih wamal	-	kašlan čenek'
23	ščihčun wamal	-	pohowil wamal	kašlan čenek'

	č'akiw	me?sak'alha? wamal	šte? čenek'	mokoč tah
1	-	-	-	
2	pahal wamal	-	cop	
3	(u)	wamal	wamal	tah
4	wamal	wamal	wamal	tah
5		sak'al ha?	šte?el čenek'	
6	(u)	-	šte?ul čenek'	
7			te?el čenek'	
8	wamal, čahp	wamal	čenek'	
9			šte? čenek'	bac'il tah
10	-	-	šte?el čenek'	mamal tah, k'isis
11	pahal wamal	čahp wamal,nahtil	šte?el čenek'	
12	wamal	sakil ničim	šte?el čenek'	tah
13	cahal wamal	yašal wamal	sakil wamal	mamal tah
14	pahal wamal	sak'al ha?	šte?el čenek'	k'isis tah
15	?ala wamal	wamal	škantera, šte?	k'isis tah
16	-	-	čenek', bac'il	tah
17	pahal wamal	-	šte?ul čenek'	
18	wamal, čahp	wamal, čahp	šte?el čenek'	tah, bac'il
19	pahal wamal	čahp wamal	šte?il čenek'	bac'il tah
20	č'akiw	-	čenek'	tah, k'isis
21	pahalc'eman	-	šte?il čenek'	mokoč tah
22		-	šte?il čenek'	
23	pahal wamal	-	šte? čenek'	

	šašib wamal	sakil čin?ak'	yašalnič čin?ak'	č'ič' ni?
1	-	čin?ak'	čin?ak'	č'ič' ni?
2	cop	čin?ak'	šk'a hčikintik	šašib, (u)
3	wamal	čin?ak'	čin?ak'	šašib
4	wamal	čin?ak'		wamal
5	yehk'eč mut	sakil čin?ak'	sibal čin?ak'	šašib, č'ič'ni?
6	šašib	čin?ak', bac'il	čin?ak'	ščenek' mut
7	šašib wamal	čin?ak', bac'il	šk'ahčikintek,(u)	te?
8	wamal	čin?ak', čahp		nič te?
9	-	čin?ak'	čin?ak'	č'ič' ni?
10	-	čin?ak', sakil		č'ič' ni?
11	cahal te?	sakil čin?ak'	čahp čin?ak'	č'ič' ni?
12	wamal	čin?ak'		te?
13	yašal wamal	čin?ak', yašal		yašal wamal
14	šašib kawayu	čin?ak'		šašib, č'ič'ni?
15	šašib	čin?ak'		šašib, bac'il
16	-	čin?ak', bac'il		šašib, bac'il
17	-	čin?ak', bac'il	čin?ak'	č'ič' šašib
18	wamal, čahp	čin?ak', bac'il		šašib, čahp
19	čahp šašib	sakil čin?ak'	čin?ak', muk'ul	šašib, č'ič'ni?
20	šašib	čin?ak'		šašib, č'ič'ni?
21	-	sakil čin?ak'	?ičil čin?ak'	č'ič' ni?
22	-	sakil čin?ak'	čin?ak'	č'ič' ni?
23	-	sakil čin?ak'	čahp čin?ak'	čahp šašib

	k'am?ak'	šmal waš	č'um	sahalum	šlumil čenek'
1	wamal	wamal	č'um		
2	-	yištabik			
3	wamal	wamal			šlumil čenek'
4	wamal	wamal			
5		šmal waš	č'um		
6	(u),k'am?ak'	hunta boton			šbohtil čenek'
7		wamal	č'om	sahalum	
8	k'am?ak'	wamal, čahp			
9			č'um	cahal lum	
10	k'am?ak',(u)	šmal waš, (u)			
11	k'am?ak'	šmal waš	č'um		šlumil čenek'
12	k'am?ak'	šmal waš			
13	cahal wamal	yašal wamal			
14	-	wamal			
15	k'am?ak'	wamal, (u)			
16	-	-			
17	k'am?ak'	sitinom wamal			šbohtil,šlumil
18	k'am?ak'	wamal			
19	k'am?ak'	šmal waš			šlumil čenek'
20	k'analnič wamal	pehc'ul ?ak'			
21	k'am?ak'	šmal waš			šlumil čenek'
22	k'am?ak'	h?antunwamal,šmal	č'um		šlumil čenek'
23	k'am?ak'	-	č'um		

	?awaš	cončih	beleko lo?bal	tuš ?ak	šyaš čin?ak'
1	?awaš				
2	?awaš				
3	?awaš	wamal	lo?bal, kinya	sewula,(u)	čin?ak'
4	?awaš				
5	?awaš				
6	?awaš	-			
7	?awaš				
8					
9	?awaš				
10					
11	?awaš	-			
12					
13					
14					
15					
16					
17	?awaš	c'eman	bac'il lo?bal		čin?ak'
18					
19	?awaš	sak'al č'opak	bac'il lo?bal		čin?ak'
20					
21	?awaš	-			čahp čin?ak'
22	š?awaš				
23	?awaš				

	c'irin čin?ak'
1	
2	
3	čin?ak'
4	
5	
6	čahp čin?ak'
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	čin?ak', bac'il
18	
19	nahtil čin?ak'
20	
21	c'irin čin?ak', (u)
22	
23	

TABLE IV

Imitation Subjects

No.	Name	Age	Plant trail: * = yes
1	h?aluš kusman č'ihk	3-4	
2	šmik lopis p'ut	3-4	
3	šmik ?incin poral	3-5	*
4	hpetul kusman ?osil	4	*
5	slus kusman č'ihk	5	
6	š?an kusman ?osil	5	*
7	špet belasko šil	5	
8	hšun kusman c'uhkin	5	
9	hšaw belasko šil	5	
10	šmal ?incin poral	4-6	*
11	špet belasko šil	4-6	
12	š?anton ?ernantes č'en	6	*
13	hpetul kusman č'ihk	6	*
14	hmanel kusman ?osil	6	*
15	hpetul belasko šil	6-7	*
16	š?anton kusman ?osil	7	*
17	hpetul kusman č'ihk	7	
18	h?antun kusman ?osil	7	*
19	š?anton belasko šil	7	*
20	hšaw ramines kohtom	7	*
21	h?antun lopis p'ut	7-8	*
22	špet kusman ?osil	8	*
23	slus kusman ?osil	8	
24	špet lopis puy	8	
25	hšun kusman ?osil	8	
26	š?anton ramines kohtom	8-9	*
27	špet lopis tuhk'awil	8-9	
28	š?anton belasko šil	9	*
29	h?aluš kusman ?osil	8-10	*
30	špet kusman ?osil	10	

TABLE IV (Cont.)

No.	Name	Age	Plant trail: * = yes
31	hpetul lopis ca?c'i?	10	
32	h?aluš belasko šil	10	
33	h?aluš ?incin poral	11	*
34	hpetul ramines kohtom	12	
35	h?antun belasko šil	12	
36	šmal kusman č'ihk	12-13	*

APPENDIX D

Elicited Imitations

This appendix contains a listing and partial analysis of each of the model sentences used on the elicited imitation test, and a transcription of each imitation by every child making a mistake in repeating a particular model. The child is identified by a number that refers to Table IV, and this number is followed by the child's successive repetitions of the model sentence. Letters (e.g. a., b., c., etc.) stand for monthly visits made by the child, and roman numerals (e.g. I, II, etc.) stand for different imitations attempted during one visit or on the next day.

Sentence no. 1 me sik me k'išin
'Is it cold or is it hot?'

me - coordinator, 'if, that, is it, either/or'
sik - stative verb, 'cold-it-is' (adj. in other contexts)
k'išin - stative verb, 'hot-it-is' (adj. in other contexts)

1 a., b. me hk'išin c. me šk'išin sik

2 a. ši?k'išin

3 a., b. me sik k'išin c. correct

4 a. me k'išin sik b., c., d. correct

9 a. mak sik mak k'išin

11 a. ?ay sik me k'išin

12 a. me sik k'išin b., c., d. correct

14 a. I me k'išin me sik II me k'išin me sik b. correct

20 a. sik k'išin b. correct

21 a. me sik k'išin b. correct

28 a. correct b. me sik k'išin c. correct

Sentence no. 2 ya to bal ?a?lo?
'Will you still eat (mushy foods)?'

ya - present tense particle
to - continuative particle, 'still/yet'
bal - yes/no question marking particle
?a? - 2nd pers. sing. transitive verb prefix, 'you'
lo? - transitive verb root, 'to eat (mushy foods)'

1 a. ya to bal slo? b., c. correct

9 a. mak ta?a?lo?

25 a. ma to bal ?a?lo?

Sentence no. 3 ya hmah hba
'I hit myself (present)'

ya - present tense particle
h - 1st pers. sing. inflectional prefix, 'I'
mah - transitive verb root, 'to hit'
hba - reflexive pronoun inf. in 1st sing. by prefix, 'myself'

1 a. hmah hba b., c. correct

9 a. ya hma? ma

13 a. la hmah hba b. ya smah hba

14 a. ya hmah b. correct

Sentence no. 4 ma me š?awuton
'Don't scold me!'

ma - negative particle, 'no'
me - particle, 'if/that'
š - nonpast particle
?aw - 2nd pers. sing. subject prefix (before ?____)
?ut - transitive verb root, 'to scold'
on - 1st pers. sing. object suffix (would be subject of intrans. verb)

1 a. I me me š?awuton II me šawuton b. me ši tawuton c. ma šwenta ?awuton

3 a. mm me š?awuton b. correct

4 a. correct b. ma me ya š?awuton c., d. correct

14 a. me... ma me š?awut b. correct

Sentence no. 5 č'inat to
'You are still small' (no mistakes on this sentence)

č'in - adjective, 'small
Ø - stativizing suffix
at - 2nd pers. sing. subject
to - continuative

Sentence no. 6 me ya?ak'an wah, me kašlan wah
'Do you want tortillas or bread?'

me - coordinator, 'either/or'
ya - present tense particle
?ak'an - trans. verb root k'an inflected in 2nd pers. sing.
wah - noun, 'tortilla'
kašlan - adj., 'ladino' (ladino tortilla = 'bread')

1 a. kašlan wah b. hk'ana wah, kašlan wah c. me hk'an bah

2 a. kašlan, wah

3 a. me ya?ak'an wah, kašlan wah b., c. correct

6 a. me ya?ak'an kašlan wah b. me ya?ak'an wah, kašlan wah

9 a. ya?ak'an.. kašlan wah

10 a. me ya?ak'an wah m kašlan wah b., c. correct

11 a. me ya?ak'an kašlan wah

12 a. ha? bal ?ak'an kašlan wah b. me ya?ak'an wah me ya?ak'an ko.,
kašlan wah c. me ya?ak'an wah, kašlan wah d. correct

14 a. me ya?ak'an ya? kašlan wah b. me ya?ak'an kašlan wah

15 a., b. me ya?ak'an wah, kašlan wah

17 a. correct b. me ya?ak'an mah me kašlan wah

19 a. me ya?ak'an me.. ya?ak'an kašlan wah

21 a., b. me ya?ak'an kašlan wah

22 a. me ya?ak'an wah, kašlan wah b. correct

24 a. me ya?ak'an me ya?ak'an, kašlan wah

27 a., b., c. me ya?ak'an wah, kašlan wah

28 a. me ya?ak'an, me wah me kašlan wah

33 a. me ya?ak'an wah, me ya?ak'an kašlan wah

36 a. me ya?ak'an wah me ya?ak'an kašlan wah

Sentence no. 7 k'alal te ya šlihk spasik
'when they begin to make it'

k'alal te - introducer (relative depen.), 'when'
ya - present tense particle
šlihk - š (non-past aspect) + lihk (intrans verb), 'he begins'
spasik - s..ik (3rd pl.) + pas (trans verb root), 'they make (it)'

1 a. I k'alal me šiik II k'alal sle šiik b. I k'alala la ta tal čik
II k'alala šiik c. k'alal ta.. lihk le siik

2 a. k'alal ta me ?ala... ?ala ma?yuki., ha c' ma?yuk, ma?ba stak'on

3 a. pasik b. k'alal te ya spasik c. k'alal te ya s..., šlihk ya
spasik

4 a., b. correct c. k'alal ta ya šlihk spasik d. correct

5 a. correct b. k'alal te ya slihk spasik c. k'alal te lihk ya špasik

6 a. k'alal te ya bit'il spasik b. correct

9 a. k'alal me ya?pasik

10 a. k'alal ya šlihk spasik b. correct

11 a. k'anal ya šnihk spasik

12 a. k'alal te... k'alal ya šlihk spasik b., c. correct d. k'alal ta lihk spasik

13 a. k'alal ya šlihk spasik b. correct

14 a. k'alal ya šlihk pasik b. correct

16 a. correct b. k'alal te ya ya šlah sp... lihk spasil

17 a. correct b. ?alal te ya šlihk spasik

21 a. k'alal me ya spasik b. k'alal te ya... te bit'il šlihk spasik

23 a. k'alal ya šlihk spasik

24 a. k'alal bit'il ya šlihk spasik

27 a., c. correct b. k'alal te la šlihk spasik d. ?alal te ya šlihk spasik

31 a. k'alal te me ya šlihk spasik

32 a. k'alal me ya šlihk spasik

Sentence no. 8 ya š?alah šnič'nah
'They are having children'

ya - present tense particle
š - nonpast aspect
?alah - derived intrans. verb stem, 'to bear child'
nič'nah - derived intrans. verb stem, 'to beget child'

1 a. I hnič'nah II nič'nah b. ?ala nič'nah c. ya ?ala nič'nah

2 a. ya š?alah šnič' ?a

3 a. ?ala šnič'na? b. ya š?alah šni..čnah c. correct

4 a. ya š?alah ya šnič'nah b., c., d. correct

7 a. ya š?alah ya šnič'nah

9 a. ya?an ya š?ič' nah

12 a. correct b. ya š?alah ya šnič'nah c., d. correct

14 a. ya šlah ?alal šnič'e b. correct

17 a. ya š?alah šišnah b. correct

19 a. ya š?alah ya šnič'nah

28 a. ya š?alah ya šnič'nah

36 a., b. ya š?alah ya šnič'nah

Sentence no. 9 ya hk'an ?išim sok ?askal sok wah sok tomut
'I want corn and sugar and tortillas and eggs'

ya - present tense particle
hk'an - h (1st sing) + k'an (trans. verb root), 'I want'
?išim - noun, 'corn'
?askal - noun, 'sugar'
wah - noun, 'tortillas'
tomut - noun, 'eggs'
sok - coordinating particle, 'and/with'

1 a. I sok tomut II sok tomut, sok wah, sok ščenek' b. sok tomut
c. la sk'an wah

2 a. šok tomut, šok wah, šok.. hani..haninini, ma?ba štak' niš ?a

3 a. ya hk'an ?askal sok tomut b. ya hk'an sok ?askal sok tomut
c. ya sok ?askal sok tomut

4 a. ya hk'an sok wah sok ?as... sok ?askal sok tomut, sok ?išim
b. ya hk'an sok ?išim sok... sok... sok tomut sok ?išim
c. ya hk'an sok ?išim sok tomut sok ?askal.. sok... sok ?išim
d. ya hk'an sok ?askal sok wah sok tomut

5 a. ya hk'an ?askal sok.. b. ya hk'an ?askal sok ?išim sok tomut
c. ya hk'an ?išim sok ?askal sok tomut

6 a. ya hk'an sok ?išim sok tomut b. ya hk'an ?išim sok tomut

7 a. ya hk'an ?išim sok wah sok tomut

8 a. ya hk'an ?išim sok wah sok tomut

9 a. ya?ak'an sok... sok ?askal sok tomut

10 a. ya hk'an sok ?askal sok... sok sok sok sok... sok tomut, sok wah
b. ya hk'an sok ?askal sok wah sok tomut c. ya hk'an sok ?askal sok tomut

11 a. ya hk'an ?askal sok wah sok tomut

12 a. ya hk'an ?išim sok wah sok tomut b. ya hk'an ?askal sok tomut
c. ya hk'an ?išim sok wah sok tomut sok ?ask.. d. ya hk'an ?išim sok ?askal sok tomut

13 a. ya hk'an sok ?išim sok tomut sok wah, kašlan wah b. ya hk'an ?išim sok tomut sok wah

14 a. ya hk'an ?išim sok wah b. ya hk'an ?išim sok ?askal sok kašlan wah sok tomut

15 a. ya hk'an ?išim sok wah sok ?askal sok tomut b. ya hk'an ?išim sok wah sok tomut

16 a. ya hk'an ?askal sok tomut sok wah b. ya hk'an k'išin sok wah sok ?išim

17 a. ya hk'an ?askal sok ?išim sok tomut sok wah b. ya hk'an ?išim sok wah sok tomut

18 a. ya hk'an ?išim sok wah sok ?askal sok tomut
b. ya hk'an ?išim sok wah sok tomut sok ?askal

19 a. ya hk'an ?askal sok ?išim sok wah sok tomut

20 a. ya hk'an ?išim sok wah sok tomut
b. ya hk'an ?išim sok ?askal, sok tomut sok wah

21 a. ya hk'an ?išim sok wah sok tomut

22 a. ya hk'an ?išim sok ?askal sok tomut

24 a. ya hk'an sok ?išim sok ?askal sok tomut
b. ya hk'an sok ?išim sok ?askal, sok tomut sok wah

25 a. ya hk'an ?išim sok ?askal sok tomut

26 a. ya hk'an ?išim sok... ya hk'an sok ?išim sok tomut
b. ya hk'an ?išim sok wah sok tomut

27 a. correct b. ya hk'an ?išim sok wah tomut ?askal
c. ya hk'an wah sok ?išim sok tomut

28 a. ya hk'an ?išim sok ?askal sok tomut sok wah

29 a. ya hk'an ?išim sok wah sok tomut b. ya hk'an ?išim sok wah sok tomut

30 a. correct b. ya hk'an ?išim sok ?askal sok tomut sok wah
c. ya hk'an ?išim sok wah sok tomut sok ?askal

31 a. ya hk'an sok ?askal sok tomut

32 a. ya hk'an ?askal sok wah, sok tomut

33 a. ya hk'an ?išim sok wah sok tomut

34 a. ya hk'an ?išim sok wah., sok ?askal sok tomut

35 a. correct b. ya hk'an ?išim sok wah., sok ?askal sok tomut

36 a. ya hk'an ?askal sok ?išim sok wah sok tomut

Sentence no. 10 tik' naš ?a, ma šhu? spasel bayel
'That's all, he can't do much'

tik'?a - particle + particle, 'that's all'
naš - particle, 'only/just'
ma - negative particle
šhu? - aspect + intransitive verb, 'it is possible'
spasel - verbal noun possessed in 3rd singular, 'his making/doing'
bayel - numeral particle, 'much/many'

1 a. šhu? pasel balel b. I šhu? pašel bayel II tik na?aš šhu? pasel
c. ma šhu? pasel bayel

2 a. tik naš ?a. ma?ba šhu? ha špašel

3 a. ma šhu? spasel b. ma šhu? spasel bayel c. ya šhu?, tik naš ?a, šhu? spasel

4 a. ma šhu? spasel tik naš... ma hšhu? spasel, tik naš ?a b., c. correct

5 a. tik naš ?a ma šhu? spasel b., c. correct

6 a., b. ma šhu? spasel bayel

8 a. tik naš ?a ma šhu? spasel

9 a. šya šhu? ?a, ma šhu? pasel

11 a. ma... tik naš ?a ši? sasel ?ayel

12 a., b., d. correct c. tik naš ?a šhu? pasel bayel

14 a. tik naš ?a mašhu? spasel b. correct

21 a. ma šhu? spasel bayel b. correct

31 a. ma šhu? spasel bayel

36 a. correct b. tik naš ?a ma šhu? spasel

Sentence no. 11 ?an lok'el
'He left fleeing'

?an - intrans. verb root and stem, 'he fled'
lok'el - post-verbal directional modifier, 'leaving'

22 a. ya hk'an lok'el

Sentence no. 12 ma stak' šben
'He can't go'

ma - neg particle
stak' - trans. verb root inflected 3rd sing., 'it-is-possible'
šben - intrans. verb root (ben) + aspect (š), 'he-goes'

1 a. tak ben b. tak' ben c. ma stak' ben

2 a. ma tak' šben

3 a., b. correct c. ya šben

Sentence no. 13 la spas yil
'He made him see (it)'

la - past tense particle
spas - trans verb root pas + 3rd sing. s, 'he makes'
yil - trans verb root ?il + 3rd sing. y, 'he sees (it)'

1 a. I spas lil II sašyil b. I paš yil II paš.. li, yil
c. ya spas li?i

2 a. la špaš yil

9 a. mas... ma spas yil

11 a. šlah spasbil

21 a. correct b. ta spas yil

Sentence no. 14 ya yak'be yuč'
'He has him drink (it)' [active of no. 16]

ya - present tense particle

yak'be - 3rd sing y + tv root ?ak + indirective be, 'he gives (to him)'

yuč' - 3rd sing y + tv root ?uč', 'he drinks'

1 a. I yak'bel šuč' II yak'bel yuč' III yak'bel šyuč' b. I yak'be yuč' II yak'be yuč' c. yak'be yuč'

2 a. ya hyak'ben yuč'

4 a., b. la yak'be yuč'

5 a. la yak'be yuč' b. correct

11 a. ya yak'bel yuč'

12 a., b., c. correct d. la yak'be yuč'

Sentence no. 15 li to ta yut hnai
'over here in my house'

li...i - particle, 'here'

to - continuative particle, 'still'

ta - preposition, 'at'

yut - noun, 'interior'

hna - 1st sing. h (possessor) + noun na, 'my house'

1 a. I lito lana hnai II li tulana hnai b. li?ni hnahi
c. lit to ta yut hnahi

9 a. li? ta yut hnai

Sentence no. 16 ya š?ak'bet yuč' yu?un
'He is made to drink by him' [passive of no. 14]

ya - present tense particle

š?ak'bet - passive of yak'be, 'he is given (by him)'

yuč' - 3rd sing y + tv root ?uč', 'he drinks'

yu?un - 3rd sing inflected noun, 'on-his-account'

1 a. yak'bet šyuč' yu?un b. I kak'bet ?a yuč'ul yu?un
II ?ak'bet ?a yuč' yu?un c. yak'beta ?uč' yu?un

2 a. ya š?ak'bet šyuč' yu?un

9 a. ya yak'bet yuč' yu?un

11 a. ya yak'bet... š?ak'bet yuč' yu?un

Sentence no. 17 ya stak' snihkesiš
'He can move it already'

ya - present tense particle
stak' - 3rd sing + tv root, 'it-is-possible'
snihkes - 3rd sing + tv stem, 'he moves it'
iš - enclitic completive, 'already'

1 a. I tak' ?inaheliš II ya?unoiš III tak' nihketiš b. I tak'an ya hk'aniš nišiš II tak' ni ?ek te šiš c. la stak' nihkešiš

2 a. ya štak' šnihkešiš

3 a. ya stak' š... snihkesiš b. correct c. ya stak' ya snihkesiš

4 a. ya štak' snihkesiš b. ya stak' ya snihkesiš c. correct d. ya stak' snihkešiš

5 a. ya stak' šnihkešiš b., c. correct

6 a. ya stak' šnihkesiš

9 a. ya stak' šnihkešiš

10 a. yu?..ma stak' snihkešiš b. correct c. ya stak' ya snihkešiš

11 a. ya štak' šnihkešiš

12 a., c. correct b., d. ya stak' snihkešis

13 a., b. ya stak' snihkešiš

14 a. correct b. ya stak' snihkešiš

15 a. ya stak' snihkešiš b. correct

16 a. ya stak' snihki... snihkesiš b. correct

17 a., b. ya stak' snihkešis

19 a. ya stak' snihkešis

22 a. ya stak' slihkesiš

25 a. ya stak' snihkešiš

26 a. correct b. ya štak' snihkesiš

27 a., b. correct c. ya stak' šnihkešis

29 a. ya sna?... ya stak' snihkesiš b. correct

31 a. ya stak' snihkešis

35 a., b. ya stak' snihkešiš

36 a., b. ya stak' ya snihkesiš

Sentence no. 18 la yič' te hulele
'He took up the piercing (of it)'

la - past tense particle
yič'- 3rd sing y + tv root ?ič', 'he takes up'
te...e - demonstrative, 'the'
hulel - verbal noun, 'piercing'

1 a. I li? čiel hulele II yič' yulele b. I, II yič' hulele
c. correct

2 a. ya hyi... la yič' te hulele

21 a. correct b. ta yič' te hulele

Sentence no. 19 ma stak' tuntesel
'One cannot eat it'

ma - negative particle
stak' - 3rd sing. + tv root, 'it-is-possible'
tuntesel - verbal noun, 'eating'

1 a. ma stak' tuntešel b. I tak tuntešel II tak' tultesel
c. correct

2 a. ma htak' štuntešel

3 a., c. correct b. ya stak' tuntesel

15 a. ma stak' stuntesel b. correct

Sentence no. 20 la stikun ta leel
'He sent (him) searching'

la - past tense particle
stikun - 3rd sing. + tv stem, 'he sends (him)'
ta - preposition, 'to'
leel - verbal noun, 'looking/searching'

1 a. stikun hleel b. I tikun leel II kun ta lehel III tukune hlehel
c. stukun ta leel

2 a. la štikun ta lehel

9 a. la stikun tal ta leel

14 a. la stikun ta.. leele b. I la stikun tal II la stikun tal leel

21 a. correct b. ta stikun ta leel

23 a. la stikun tal leel

Sentence no. 21 la stabe, lok'el tal ta nuk'el
'He found it for him, sucking it out'

la - past tense particle
stabe - 3rd sing. + tv root + indirective, 'he finds (it) for him'
lok'el - post-verbal directional modifier, 'leaving'
tal - post-verbal directional modifier, 'coming'
ta - preposition, 'by'
nuk'el - verbal noun, 'sucking'

1 a. I la, la? lael II lok'el nuk'el III tabe nuk'el b. I tah lok'el II tuke hlok'el c. I tabe tal ta lok'el II tah tala nuk'ele

2 a. la štahbel ta lok'el

3 a. la stab slok'el ta lumil b. la stahben ta ta nuk'el c. la stahben lok'el ta nuk'el

4 a. la stabel ta nuk'el tal b. la sta, ta ta lok'el ta nuk'el c. la stabel lok'el tal ta nuk'el d. correct

5 a. la sta ta lok'el ta nuk'el b. la stabe tal ta lok'el tal ta nuk'el c. la stak'be tal ta nuk'el nuk'el

6 a. la stabe lok'el ta nuk'el b. la stabe, nuk'el ta lok'el

7 a. la sta... ya s... la sta nuk'el tal ta n... nuk'el

8 a. la stabe ta n... ta lok'el tal ta nuk'el

9 a. la sta tal nuk'elel

10 a. la stabe tal lok'el tal nuk'el b. la stabe la... la stabe tal ta nuk'el c. la stabe tal lok'el ta nuk'el

11 a. la stabe.. tal ta nuk'el

12 a., b. la stabe tal ta nuk'el c., d. la stabe tal ta nuk'el tal

13 a., b. la stabe tal ta nuk'el

14 a. la stabe lok' tal b. ta sta lok'in tal

16 a., b. la stabe tal, lok'el ta nuk'el

19 a. la sta., tal ta lok'el

20 a. correct b. la stabe nuk'el... lok'el tal ta nuk'el

21 a. la stah tal lok'el ta nuk'el b. la stabe tal, lok'el ta nuk'el

22 a., b. la staben tal lok'el ta nuk'el

23 a. la stabe tal ta nuk'elel

24 a. la stabe tal lok'el ta nuk'el

25 a. la stabe tal lok'el ta nuk'el

27 a. la stabe nuk'el tal ta lok'el b., c. correct

29 a., b. la stabe tal, nuk'el

28 a. la stabe tal, ta lok'el ta nuk'el

31 a. la stabe tal ta nuk'el

32 a. la stabe tal, lok'el ta nuk'el

33 a. la stabe tal lok'el ta nuk'el

34 a. la stabe tal, lok'el ta nuk'el

36 a., b. la stabe tal lok'el ta nuk'el

Sentence no. 22 ma hna? bi ?ora ya štal
'I don't know when he is coming'

ma - neg. particle
hna? - 1st sing. + tv root, 'I know'
bi ?ora - interrogative time phrase, 'when' (here used as relative)
ya štal - tense + aspect + iv root, 'he comes/is coming'

1 a. ma yal stal b. I stak' ?ata ?ola tal II ?olal taltal
c. ma ma la, ?ala tal

2 a. ma hna? bi ?ora štal

3 a. ma hna? ?o... bi ?ora štal b. ma hna? bi ?ora štal

4 a. ma hna? ma., bi ?orail aštal b. ma hna? bi ?orail aštal
c. correct d. ma hna? bi ?ora ya štal ?ek

6 a. ma hna? mi ?ora ya štal b. ma hna? ?ora ya štal

9 a. ma hna? binti., ?orail štal

11 a. ya ma hna? bi ?ora štal

12 a., b., d. correct c. ma hna?., ?ora ya štal

13 a. correct b. ma hna? bi ?ora štal

14 a. ma sna? bi ?ora ya šta štal b. ma hna? bi ?ora štal

15 a. correct b. ma hna? bira... bi ?ora ya štal

16 a., b. ma hna? bi ?orail ?a štal

21 a. ma hna? bi ?ora štal b. correct

22 a. mm... ma hna? bi ?ora štal b. correct

Sentence no. 23 ya šlok' ta sti? sna
'He is going out his door'

ya šlok' - tense + aspect + iv root, 'he is leaving'
ta - preposition, 'by/through'
sti?sna - 3rd sing + noun + 3rd sing + noun, 'its-mouth his-house' = 'door'

1 a. I lok'on hti? na II lok' ti? na b. I taka ta stina
II lok'a ti? sma c. lok' ta n... ti? na

2 a. ya šlok' ta šti? šna

3 a., c. correct b. la šlok' ti... te ta ti? sna

5 a. la š... ya šlok' ta sti? sna b. ya slok' ta sti? sna c. correct

6 a. correct b. ya slok' ta sti? sna

11 a. ya šlok' ta si? sna

21 a. ma šlok' ta sti? sna b. correct

Sentence no. 24 bi yu?un hič ya ?a?pas
'Why are you doing it that way?'

bi yu?un - interrogative purpose phrase, 'why?'
hič - adv. particle, 'thus/thusly'
ya ?a?pas - tense + 2nd sing. + tv root, 'you do (it)'

1 a. hič ?apas b. I mu?unu?nu?un hwiš na?aš na paš II yu?unu?ul ta hnič'nah c. bu?unun.. teb hič ta pas

2 a. bi yu?un hič ?a ša?pas

3 a., b. correct c. hi... bi yu?un hič ma š... ya ?a?pas

4 a., b., d. correct c. bi yu?un hič la?a?pas

12 a., b., d. correct c. bi yu?un ya hič ya ?a?pas

21 a. hič ya ?a?pas b. correct

Sentence no. 25 ma hna? te bit'il ya šč'i
'I don't know how it grows'

ma hna? - neg + 1st sing. + tv root, 'I don't know'
te bit'il - relative (manner), 'the way/how'
ya šč'i - tense + aspect + iv root, 'it/he grows'

1 a. bit'il č'i b. I ?ona? na č'i II ma?.. te č'i c. ma stak' li ta č'i

2 a. ya hna? bit'il šč'i

3 a. ma hna? bis... binti pas... ma hna? šč'i b. ma hna? bit'il te šč'i

4 a. ma hna? bit'il ya šč'i b., c. correct d. ma hna? bit'il ya šč'i

7 a. ma hna? te ya š... bi ?ora ya šč'i

9 a. ma sna? binti č'iil

10 a. ma hna? te bit'il šč'i b., c. correct

11 a. ma hna? bit'il te ya šč'i

12 a. ma hna? bit'il ya šč'i b., c., d. correct

14 a. I ma hna? bit'il ya šč'i II ma sna? te bit'il ya šč'i
b. ma hna? te bit'il šč'i

18 a., b. correct c. ma hna? bit'il ya šč'i

21 a. ma hna? bit'il šč'i b. ma hna? bit'il ya šč'i

23 a. ma hna? bit'il ya šč'i

24 a. ma hna? bit'il ya šč'i

36 a. ma hna?be te bit'il ya šč'i b. correct

Sentence no. 26 te bi ya sk'an, ha? te poše
'What he wants is liquor'

te bi - relative demonstrative, 'what'
ya sk'an - tense + 3rd sing + tv root, 'he wants (it)'
ha? - inflectible demonstrative particle, 'it is'
te...e - demonstrative, 'the'
poš - noun, 'liquor'

1 a. poše b. I ha? to to..tale II k'an ha? ta te?a..pas
c. ha? te poše

2 a. bi ya šk'an, hani ya yuč' te poše

3 a. bi ya sk'an ta poše b. bi ya sk'an, ha? te pošil

4 a., b., d. bi ya sk'an ha? te poše c. bi ma sk'an ha? te poše

5 a., b. bi ya sk'an ha? te poše c. te bi ya sk'an me ha? te poše

6 a. me bit'il ya sk'an ha? te poše b. me bit'(il) ya sk'an ha? te poše

7 a. bi yu?un ya sk'an ha? te poše

9 a. binti sk'an ha? te poše

10 a. bi ya sk'an me ha? te poše b. bi ya sk'an ha? te poše

11 a. ma hna? bi ya sk'an ha? te poše

12 a. bi ya sk'an li?be ti ha? poše b. te bi ya sk'an te ha? te poše
c. bi ya hk'an bi te ha? te poše d. bi ya sk'an me ha? te poše

13 a. bi ya sk'an me poše b. bi ya sk'an me ha? te poše

14 a. bi ya sk'an ha? te poš b. correct

17 a. correct b., c. bi ya sk'an ha? te poše

18 a. bi ya sk'an te ha? te poše b., c. correct

19 a. ma hna?... ma hna? bi ya sk'an me ha? te poše

21 a. ha? te poše b. bi ya sk'an ha? te poše

23 a. bi ya sk'an ha? te poše

24 a. bi ya sk'an ha? te poše

26 a., b. bi ya sk'an ha? te poše

27 a. bi ya sk'an... b., c., d. correct

31 a. bi ya sk'an ha? te poše

32 a. me... me bi ya sk'an ha? te poše

36 a., b. bi ya sk'an ha? te poše

Sentence no. 27 ha? wan ši lah te ?a ?ance
'Oh, it is, said the woman over there'

ha? - inflectible demonstrative particle, 'it is'
wan - particle, 'perhaps'
ši - intransitive verb, 'she said'
lah - particle, 'it is said'
te ?a - location expression (particle + particle), 'over there'
?anç - noun, 'woman'
e - demonstrative final, 'there' (part of preceding te...e)

1 a. ši lah ?ance b. I š... še? ši ?ance II ši lah ?ance
c. ha? wan šie ?ance

2 a. ha? la wan ši lah te... ha? te ?ance

3 a. ha? wan ši lah te ?ance b. ha? wan ši la ta ?ance
c. ha? wan ši lah te ?ance

4 a., b. ha? wan ši lah wan te ?ance c. ha? wan, ši lah te ?ance
d. ha? wan ši lah te ?a?a ?ance

5 a., b. ha? wan ši lah te ?ance c. correct

6 a. ha? wan ši 'te ?ance b. ha? wan ši te ?a ?ance

7 a. ha? wan ši lah te ?aance

8 a. ha? wan ši lah te ?ance

9 a. ha? wan ši š... te?, ?ance

10 a. ha? wan, ši te nahtil ?ance b., c. ha? wan ši lah te ?ance

11 a. ma hna... ha? wan ši la te ha? šiik wenta

12 a. ha? wan te šila ?ance b. ha? wan te ši te ?ance c.,d. correct

13 a. ha? wan, šiik lah te ?ance b. ha? wan ši lah te ?ance

14 a., b. ha? wan ši lah te ?ance

17 a., b. ha? wan ši lah te ha? ?ance

18 a., b., c. ha? wan ši lah te ?ance

19 a. ha? wan ši lah te ?ance

21 a., b. ha? wan ši lah te ?ance

22 a., b. ha? wan ši lah te ?ance

23 a. ha? wan ši lah te ?ance

24 a. ha? wan ši lah te ?ance

25 a. ha? wan ši lah te ?ance

27 a., b., c., d. ha? wan ši lah te ?ance

28 a. ha? wan, ši lah te ?a te ?ance

29 a. correct b. ha? wan ši lah te ?ance

31 a. ha? wan ši te ?ance

32 a. ha? wan ši lah te ?ance

34 a. ha? wan ši lah te ?ance

36 a. correct b. ha? wan ši lah te ?ance

Sentence no. 28 ya to ni wan spas
'He will make it perhaps'

ya - present tense particle
to - continuative particle, 'still/yet'
niwan - particle + particle, 'perhaps'
spas - 3rd sing + tv root, 'he makes'

1 a. ya to wan hpas b. I wate hmale pas II ya to bal ?a?paš... pas
c. ya to wan ya pas

2 a. ya to wan špaš

3 a., b., c. ya to wan spas

4 a. ya to win... ya to ni wan spas b., c., d. correct

12 a. ma to wina pas b. correct c. ya to wan ya spas d. ya to wina spas

13 a. correct b. ya ti ni wan spas

14 a. ya to wani spas b. correct

Sentence no. 29 hič ma to šlah ni wan spas
'Thus he will not finish making it perhaps'

hič - inflectible particle, 'thus'
ma - neg. particle
to - continuative particle
šlah - aspect + iv root, 'he finishes'
niwan - particle + particle, 'perhaps'
spas - 3rd sing + tv root, 'he makes'

1 a. I ya to wan hpas II ma to wan hpas b. I miš la to ya pas
II ya hni? nah paš, pas c. hič ya spas

2 a. ya to wan špaš

3 a. hič ma... ma?yuk šlah yo?tan spas b. hič wan, ma to šlah spas
c. hič ni wan, ma šlah spas

4 a. hič ma to... ma to šlah spas b. hič..m... ma to ma šlah spas
c. correct d. hič ma to... ma to.. ya.. niwan šlah spas

5 a. hič ma to ni wan šlah spas b. hič ma to slah ni wan spas
c. correct

6 a. hič to ni wan ma to ni wan spas b. hič ma to ni wan spas

7 a. hič ma to ni wan ya spas

8 a. hič ma to... ma to.. šlah spas

9 a. hič ni wan ma to ni wan spas

10 a. hič ma to wan šlah spas b., c. hič ni wan ma to ni wan šlah spas

11 a. hič ni wan, ma to ni wan šlah hmmsta

12 a. ha? to wana šlah ni.. pas b. hič ma to ni wan šlah spas
c., d. hič ma to wan lah spas

13 a. hič... hič ?a b. ha?.. hič ni wan me šlah spas

14 a., b. hič ma to ni wan šlah spas

15 a. hič ma to ni wan šlah spas b. correct

16 a. hič ma to ni wan las... šlah spas b. hič ma to ni wan šlah spas

17 a. hič ma to ni wan šlah spas b. hič ma to ni wan šlah ni wan spas
c. correct

18 a. hič ma to ni wan slah spas b., c. hič ma to ni wan šlah spas

19 a. hič to, ma to ni wan, šlah to spas

20 a., b. hič ma to ni wan šlah spas

21 a. hič ma to ni wan slah spas b. hič ma to ni wan šlah spas

22 a. hič to ni wan, ma to šlah spas b. hič ni wan, ma šna wi šlah spas

23 a. hič ni wan ma to šlah spas

24 a. hič ma to wan šlah spas

25 a. hič ma to ni wan šlah spas

26 a. hič ma to ni wan šlah spas b. correct

27 a. I hič ni wan ma to ni wan bi ya spas šlah II correct b. hič ma..
ma to ma to ni wan bi ya spas c. hič n... hič ni wan, ma to ni, šlah
ni wan spas

28 a. hič ma to.. ni wan.. šlah spas

31 a. hič mati wan, šlah spas

32 a. hič to ni wan, ma to šlah spas

34 a. hič ma to..l... šlah ni wan spas

36 a., b. hič ma to ni wan šlah spas

Sentence no. 30 ?ay wan ba?ay c'i ?anc č'i ši lah
'There's some where the woman is, she said'

?ay - inflectible particle, 'there is/there are'
wan - particle, 'perhaps'
ba - interrogative/relative particle, 'where'
c'i - exclamatory particle
?anc - noun, 'woman'
č'i - exclamatory particle
ši lah - iv stem + particle, 'she said'

1 a. I ?ay ?anc ši lah II nti, ?ay ?anc ši lah b. I ?an ba šila
II ba?ay ?anče, ?ance ši lah c. ?ay ?anc šila

2 a. ?ay wan ba?ay č'i ?anč ši, ši lah

3 a. ?ay wan ba?ay ?anc č'i b. correct c. ?ay wan ba?ay c'i ?anc
č'i ši

4 a. ?ay wan, ?ay wan, ?ay wan, ?ay wan, ?ay wan ba?ay ?anc
b., c., d. correct

5 a. ?ay wan ba?ay c'i ?anc č'i, ši b., c. correct

6 a. ?ay ni wan ba?ay c'i ?anc č'i, ši lah b. correct

9 a. ?ay wan banti ?ay ?i ?anc ?i ši lah

10 a. ?ay wan šila wan... šila wan c'i b. ?ay la wan ba?ay c'i ?anc
?i ši lah c. correct

11 a. hič wan ?ay wan ba?ay ?i ?anc ?i, ši lah

12 a. ?ay wan ?anč'i, ši lah b. ?ay wan ba?ay c'i ?anc č'i, ši
c., d. correct

14 a. ?ay wan š.. ?anci ši... ?anci č'i.. ši b. ?ay wan ba?ay c'i
?anci ši lah

21 a. ši., ?ay wan ba?ay c'i ?anc č'i b. mak ya b?ay c'i ?anc č'i ši lah

23 a. mak ?ay wan ba?ay c'i ?anc č'i, ši lah

31 a. ?ay wan c'i ba?anc č'i, ši lah

Sentence no. 31 bi yu?un te ma?yuk ha? te ?a
'Why is there no water over there?'

bi yu?un - interrogative purpose phrase, 'why?'
te - demonstrative

ma?yuk - neg. incorp. subjunctivized inflectible particle, 'there is none'
ha? - noun, 'water'
te ?a - location adverbial (particle + particle), 'over there'

1 a. I ma?yuk ha? te ?a II ha? te ?a b. I mu?uku ha?ay ha? te ?a
II bu?unil ta tal III ma?yuk ha? te ?a c. ma?yuk te ha? te ?a

2 a. ha? la wan, bi yu?un ha? la wan

3 a. bi yu?un te ha?... bi yu?un b. bi yu?un ma?yuk te ?ay ha? ?a
c. bi yu?un ma?yuk te ha? ?a

4 a. bi yu?un ma?yuk te ha? ?a b., d. bi yu?un ma?yuk te ha? te ?a
c. bi yu?un mayuk ha? te ?a

6 a. bi yu?un ha? te ?a b. correct

10 a. correct b. bi yu?un te ?a ma?yuk ha? te ?a

12 a. bi yu?un ya ma?yuk ha? te ?a b. correct c., d. bi yu?un
ma?yuk ha? te ?a

13 a. bi yu?un ma?yuk ha? te ?a b. correct

14 a. ma la ?ayuk bi yu?un te ha? b. bi yu?un bi yu?un mayuk ha? te ?a

17 a., b. correct c. bi yu?un te ha?... ma?yuk ha? te ?a

18 a. bi yu?un ha? te ?a b. bi yu?un h... ha? ma?yuk te ?a
c. bi yu?un ha?... ma?yuk te ha? te ?a

21 a. ha? te ?a b. bi yu?un ha? te ?a

24 a. bi yu?un ma?yuk ha? te ?a

27 a. bi yu?un te ha? te ?a b., c. bi yu?un ma?yuk ha? te ?a

32 a. bi yu?un mė ha? te ?a

36 a. ha? te ?a ši lah b. correct

Sentence no. 32 kerem mak mámal
'(Is he) young or old?'

kerem - noun, 'boy'
mak - coordinator, 'or'
mamal - noun, 'old man'

1 a. mamal b. kemel mamal c. kerem mámal

2 a. kerem ma... kerem, ma?ba mamal

3 a. kerem mak... mak mamal b. kerem me... mak mamal c. kerem
mam... mak mamal

4 a. kerem mamam b., c. correct d. mak kerem, ma.. mamal

7 a. kerem mamalal.. ma mamal

9 a. kerem mamal

10 a. mak kerem ma mámal b. ma.. kerem mak mámal c. correct

12 a. kerem mamal š.. b. correct c. kerem mamal.. ta mamal
d. kerem m... mak mamal

13 a. kerem ma mámal b. mak kerem me mamal

14 a. kerem ma mamalal b. I kerem mamal II kerem ma...m... mak mamal

21 a. correct b. mak... kerem mak mamal

23 a. mak kerem ma mámal

Sentence no. 33 ma to ya spas
'He is not yet to make it'

ma - neg particle
to - continuative particle, 'yet'
ya spas - tense + 3rd sing. + tv root, 'he makes (it)'

1 a. ma to wan hpas b. I ya to ma la pas II ya to bal pas
c. ya to bal pas

2 a. ma to wan špaš

3 a. ma to spas b., c. correct

9 a. ma to wan hpas

12 a., b., d. correct c. ya to ma spas

17 a. ma to ya ya spas b., c. correct

22 a. ma to ya ya spas b. correct

23 a. ma tó ya spas

Sentence no. 34 ma? spas
'He doesn't make it'

ma? - negative particle
spas - 3rd sing + tv root, 'he makes'

1 a. I ya to pas II ma to pas b. I ma paš II ma hpas c. ma pas

2 a. ma špaš

22 a. ma?ba spas b. correct

Sentence no. 35 mak ya sman mutétik
'Does he buy chickens?'

mak - coordinator, 'or'
ya sman - tense + 3rd sing + tv root, 'he buys'
mutetik - noun + plural etik, 'chickens'

1 a. man smutetik b. I man m.. mutetik II manel mutetik
c. ya pamam mutetik

2 a. ma ya.. šman mutetik

3 a. mak la sman mutetik b. me... me? sman mutétik
c. mak ma ya sman mutetik

6 a. correct b. makmá ya sman mutetik

9 a. mak sm... sman mutetik

10 a. mak ya sman tatik b., c. correct

12 a. yu kati sman mutetik b., c. correct

13 a. ma sman mutetik b. correct

14 a. ma sman mutetik b. mak mas... ya sman mutetik

22 a. ma ya sman mutétik

31 a. ya sman mutetik

Sentence no. 36 ma?ba ya š?a?teh ?a
'He didn't work before, but now he does'

ma?ba - negative
ya š?a?teh - tense + aspect + iv stem, 'he works'
?a - adverbial particle (implicit contrastive past)

1 a. ?a?teh ?a b. ma?ba tal ta ?a?tel c. mastak' ?a?teh ?a

3 a. ma?ba ya š?a?teh b. ma?ma š?a?teh ?a c. ma?ba ya š?a?teh te ?a

5 a. ma?ba ya š?a?teh b., c. correct

6 a. ma?ba ya š?a?teh ma b. correct

9 a. ma ma š?a?teh ?a

14 a. ma?ba ya š?a?teh b. correct

17 a. ma?ma ya š?a?teh ?a b., c. correct

31 a. ma?ba la š?a?teh ?a

36 a. ma?ma ya š?a?teh ?a b. correct

Sentence no. 37 ya špuhk'ín mak
'Does he mix it?' / 'Is it being mixed?'

ya špuhk'in - tense + aspect + iv stem, 'it mixes'
mak - coordinator/interrogative

1 a. puhk'ín mak b. puhkin mak c. puhkín mak

3 a. špuhkin b., c. correct

11 a. mak ?a špuhkin mak

13 a. correct b. yak špuhkín mak

14 a. ya škucín ma b. ya špuhkín ma

Sentence no. 38 ša?wil
'Look (at it)!'

ša?wil - aspect + 2nd sing + tv root, 'you be looking'

1 a. I wil muk II wil b. I correct II ša?bil c. correct

2 a. ša... ša?wil

Sentence no. 39 ?očan ?a?tehan

?očan - iv root + iv imperative suffix, 'enter!'
?a?tehan - iv stem + iv imperative suffix (an), 'work!'

1 a. ?očan ?a?teil ?ahan b. I ?očan ?a?teh II correct c. ?očan ta htan

14 a. ?oč ?awran b. correct

25 a. ša?wil, ?očan ?a?tehan

Sentence no. 40 hayeb keremetik te ?a
'How many boys over there?'

hayeb - numeral interrogative, 'how much/how many'
keremetik - noun + plural, 'boys'
te ?a - locative adverbial, 'over there'

1 a. I hawewe kerem te ?a II hawe kerem ti? te ?a b. I hokohon mutetik te ?a II kemeltik te ?a c. hayebetik ee ?a

2 a. halal, hani keremetik ?a... te ?a

4 a. hayeb keremetik b. correct c. bayel keremetik te ?a
d. hayeb keremetik te ?a

5 a. hayeb keremetik ?a b., c. correct

6 a. hayeb keremetik b. correct

11 a. hayebe keremetik te ?a

22 a. hayebe keremetik te ?a b. correct

Sentence no. 41 ?a č'ion tal
'I grew up long ago'

?a - aspect (completed long ago)
č'ion - iv root + 1st sing subject, 'I grew (up)'
tal - post-verbal directional modifier, 'coming'

1 a. ?am č'uh tun š?uhtal b. I ?unču tal II ?a čultal c. ?a čonta

9 a. ?a čun tal

14 a. ?a č'in la b. correct

23 a. ?a č'a? č'ion tal

Sentence no. 42 lom lek ya šk'ahin ?a
'He sang very well before, but not now'

lom - intensifying particle, 'very'
lek - adv. particle, 'good/well'
ya šk'ahin - tense + aspect + iv stem, 'he sings'
?a - adv. particle (implicit contrastive past)

1 a. lok lek k'ahin tal b. I lek ya sk'ahin ?a II toh lek ya k'ahin lah tal c. lom lek k'ahin ?a

2 a. lom š... lek šk'an ?a

3 a. lom lek šk'ahin ?a b. lek šk'ahin ?a c. correct

4 a., b. bun lek ya šk'ahin ?a c. correct

11 a. lom lek ya šk'ahin te ?a

14 a. correct b. lom lek ya šk'ahin lah

19 a. ya š... lom š... lek ya šk'ahin ?a

21 a. lom lek šk'ahin ?a b. correct

Sentence no. 43 la sc'un smay ?a
'He planted his tobacco with it'

la sc'un - past tense + 3rd sing subj. + tv root, 'he planted'
smay - 3rd sing possessor + noun, 'his tobacco-plant'
?a - instrumental particle

1 a. I č'un mayil ?a II may ?a b. o'un hmay ?a c. la hǒ'un may ?a

2 a. la šč'un šma... šmay ?a

3 a. sma sc'un š?a b. la ya hlek... la sc'un hmay ?a
c. la sc'un šm... smay ?a

14 a. la smay... sc'un smay ?a b. correct

17 a. la sc'un šmay ?a b. la sc'un šmay ?a c. correct

20 a. correct b. la sc'un smah ?ay

21 a. correct b. la sc'uhs mam ?a

27 a. la sc'un smay b., c. correct

Sentence no. 44 ma ya naklan
'It's not spicy, sit down!'

ma - negative particle
ya - stative verb from adj. root, 'spicy/hot'
naklan - stative verb from adj. stem + imperative suffix, 'sit down!'

1 a. naklan b. I correct II ya yah naklan c. correct

2 a. ma ya laklan

4 a., b., d. correct c. ma yan lanklan

6 a. correct b. ma yah naklan

9 a. naklan na naklan

10 a., b. correct c. ma yah naklan

15 a., b. ma yah naklan

16 a., b. ma yah naklan

20 a., b. ma yah naklan

21 a. ma yah naklan b. maylia, naklan

26 a., b. ma yah naklan

30 a., b. correct c. ma yah naklan

Sentence no. 45 ya hk'an ?ošeb tuc' k'išin tolha?
'I want three spoons of warm water'

ya hk'an - tense + 1st sing subj. + tv root, 'I want'
?ošeb - number root + numeral suffix (eb), 'three'
tuc' - noun, 'spoon'
k'išin - adjective, 'warm/hot'
tolha? - noun, 'drinking water'

1 a. ?ošeb mm ha? b. I tuc' k'išin tola? II tuc'ul k'išin tola?
c. tusok k'išin la?

2 a. ma ya hk'an k'išin ta wah

3 a. maš... ya?k'an tuc' k'išin ha?... tolha? b. ya hmayli k'išin tuc'..h.. ha?

4 a. ya hk'an ?ošeb tuc' tolha?... k'išin b. ya hk'an ?ošeb tuc'.. k'išin..ha?... tolha? c., d. correct

5 a. ya hmm,.. hk'an k'išin tuc' ya hk'an k'išin tolha?
b. ya hk'an ?ošeb tuc' k'išin tola?a c. correct

6 a., b. ya hk'an tuc' k'išin ha?

7 a. ya hk'an.. tuc' k'išin tolha?

9 a. ya hk'an ?ošeb.. tolha?

10 a. ya hk'an ?ošeb tuc'.. k'išin ha? b. correct
c. ya hk'an ?ošeb tuc' sok... sok k'išin ha?

11 a. ya hk'an tuc' ?išim tolha?

12 a., c., d. ya hk'an ?ošeb tuc' sok k'išin ha? b. correct

13 a. ya hk'an ?ošeb tuc' tolha? b. ya hk'an ?ošeb tuc' k'išin ha?

14 a. ya hk'an yuc' k'išin tolha? b. I ya hk'an hayeb tuc'
II ya hk'an ?ošeb tuc' tolha?

16 a. ya hk'an ?ošeb tuc' sok k'išin ha? b. ya hk'an ?ošeb tuc'
sok k'išin..h... tolha?

18 a. ya hk'an ?ošeb tuc' tolha? b., c. correct

19 a. ya hk'an ?ošeb tuc' k'išin ha?

21 a. ya hk'an tuc' k'išin ha? b. ya hk'an tuc' k'išin ha?... kol...
tolha?

22 a., b. ya hk'an ?ošeb tuc' k'išin ha?

23 a. ya hk'an ?ošeb tuc' k'išin ha?

24 a. ya hk'an ?ošeb tuc' k'išin ha?

25 a. ya hk'an ?ošeb tuc' k'išin ha?

27 a. I ya hk'an ?ošeb tuc' k'išin ha? II ya hk'an ?ošeb tuc'ul k'išin
ha?... tolha? b. ya hk'an... ya hk'an tuc' sok ?išim
c. ya hk'an ?ošeb tuc' sok k'išin tolha?

28 a. ya hk'an čeb tuc' k'išin tolha?

31 a. ya hk'an ?iš...k'išin tuc' tolha?

32 a. ya hk'an ?ošeb tuc' k'išin ha?

34 a. ya hk'an ?išeb tuc' k'išin ha?

36 a. ya hk'an ?ošeb tuc' k'išin ha? b. correct

Sentence no. 46 ya shun ta wayel yinam
'He sleeps with his wife'

ya shun - tense + 3rd sing subj. + tv root, 'he accompanies'
ta wayel - preposition + verbal noun, 'in sleeping'
yinam - 3rd sing. possessor + noun (?inam), 'his wife'

1 a. huni... hune ?ačikale ?ač' k'inal b. ?une k'inal hwayel
c. hun ta yaw... wale... hwayel yinam

2 a. ya šhun ta wayel šk'inal

3 a. ya shun wa... ta wayel yinam b., c. correct

4 a., b., d. correct c. la shun ta wayel yinam

6 a. ya shun ta.. bayel ?iman b. correct

Sentence no. 47 spukuhil te ya?lel sti? te čane
'the power of the snak's venom'

spukuhil - 3rd sing possessor + noun, 'its evil'
te ya?lel - demonstrative + 3rd sing poss. + noun, 'its liquid'
sti?- 3rd sing. poss + noun, 'its mouth'
te čane - demonstrative + noun + demonstrative final (e), 'the snake'

1 a. čane b. I spuku?il hi ste ti? ?e spukuhil II puku?il tal..ča?tal
c. pukuhil ta... ta... čul.. tati?

2 a. ma...špukuil.. te.. hani.. te te.. hanini.. te pukuil

3 a. spukuhil te ya?lel.. sti? ta čanel b. spukihil te ya?lel sti?
ta čamel c. kuhil ta ya?lel čamel

4 a., b. spukuhil te ya?lel čane c. puhkin ya?lel sti? te čane
d. spukuhil ya?lel sti? te čane

5 a. spukuhil te ya?lel b. pukuhil te ya?lel sti? te ščane
c. pukuhil te hyalel sti? te ščane

6 a. correct b. spukuhil te ya?lel sti? čane

7 a. I spukuhil te č..spukuhil II spukuhil te čane

8 a. puku... spukuhil te ya?lel sti? te čane

9 a. spukuhil.. s... ye sti?

10 a. spukuhil ya?lel sti? ta čan b. spukuhil te ya?lel sti? čane
c. spukuhil ta ya?lel sti? ta čane

11 a. pukuhil te ya?lel sti? te čane

12 a., b. correct c. pukuhil te ya?lel sti? ta čane d. pukuhil te
ya?lel sti? te čane

13 a. correct b. spukuhil te sya?lel sti? te čane

14 a. ya spukuhilte yane šinae b. spukuhil te yane, či?... sti?

15 a. ya s... spukuhil ta ya?lel ščane b. spukuhil te ya?lel sti? čane

17 a. spukuhiš ta ya?lel sti? te čane b., c. correct

20 a., b. spukuhil te ya?lel sti? čane

21 a. čan... spukuhil sti?.. čan.. b. spukuhil sti? te čane

22 a. spukuhil te ya?lel sti? č.. b. spukuhil ya?lel sti? te čane

23 a. spukuhil te ya?lel te sti? te čane

26 a. tuspukuhil ta ya?lel sti? te čane b. correct

28 a. te s... spukuhil te ya?lel sti? te čane

31 a. ya?lel s... ya?lel sti? te čanehe

35 a. spukuhil te ya?lel sti? čane b. correct

Sentence no. 48 ha? ča?tul č'in č'in kerem
'It is two very little boys'

ha? - inflectible demonstrative particle, 'it is'
ča? - number root, 'two'
tul - numeral classifier for humans
č'in - adjective, 'little'
kerem - noun, 'boy'

1 a. č'in č'in kemel b. I č'ul č'ul me II č'in č'in kemel
c. č'in č'in kerem

2 a. hani.. ta?atul č'in kerem

3 a. ha? č'in č'in tulan kerem b. ha? tutin č'in kerem c. č'in č'in
kerem

5 a. ha? čatul ha? č'in č'in kerem b., c. correct

6 a. ha? tutul č'in č'in kerem b. ha? tul č'in č'in kerem

7 a. me... me ?a č'in č'in kerem... kerem

9 a. č'in tul... č'a?tul č'in č'in kerem

10 a. čatul č'in č'in kerem b. ča?tul č'in č'in kerem
c. ha?... ha?.. ča?.. tul č'in č'in kerem

11 a. ča?tul, ča... ča? č'in č'in kerem

12 a. ča?tul me č'in č'in kerem b. correct c. ča?tul č'in č'in kerem
d. ha? ča?tul te č'in č'in kerem

13 a., b. ča?tul č'in č'in kerem

14 a. ha? ša?ča?... ča?tulul č'in... č'in č'in kerem b. correct

17 a. ha? čaču.. tul č'in č'in kerem b., c. correct

19 a. ha? ša?pul č'in č'in kerem

21 a. ha? tul č'in č'in kerem b. correct

23 a. ha? ča?tul.. ča?tul č'in č'in kerem

24 a. ha? čan... ča ča?tul č'in kerem

27 a. ha? čan... ha? č'in kerem mamal b., c. correct

36 a. correct b. ha? ča?ča?.. tul.. č'in č'in kerem

Sentence no. 49 maškiltik te ba ?a baht
'I don't know where he went'

maškiltik - exclamatory expression, 'I don't know/we don't know'
te ba - relative (location), 'where'
?a - aspect (past, completed)
baht - 3rd person iv stem, 'he went'

1 a. I ma hkiltik te ba..ht II ba?ay baht b. hamiltikiba.. banti ?a baht c. maškiltik ?anta baht

2 a. maškiltik banti baht

3 a. correct b. maškiltik te? banti ?a baht c. maškiltik te ?a?ba ?a baht

4 a., b., c., d. maškiltik ba ?a baht

5 a. maškiltik ba ?a baht b., c. correct

6 a. correct b. maškiltik ba?ba?a baht

7 a. maškiltik te banti baht

9 a. maškil banti ?a baht

11 a. maškiltik ?a ha? ?a baht

12 a. maškiltik bah ba ?a?baht b. correct c. maškiltik ba ?a baht
d. maškiltik banti ba ?a baht

13 a. maškiltik te ?a?ba ?a baht b. correct

14 a., b. maškiltik ba ?a baht

18 a., b. maškiltik ba?a baht

20 a. correct b. maškiltik te baha baht

21 a., b. maškiltik ba ?a baht

22 a. maškil te banti ?a baht b. correct

23 a. maškiltik ba ?a baht

24 a. maškiltik ba ?a baht

27 a. maškiltik ba ?a baht b., c. correct

31 a. maškiltik ba ?a baht

Sentence no. 50 yip ?a ke, čahp htebuk ?a
'Only my mouth is a bit strange'

yip ?a - particle + particle, 'only'
ke - 1st sing subj. + noun, 'my mouth'
čahp...?a - stative verb + particle, 'it is strange'
htebuk - numeral expression, 'a little bit'

1 a. čahpa ?o?tan ?a b. čahp ?a htebuk ?a c. ha? ke čahp ?ek ta

2 a. hani... hanihani čebuk ?a... htebuk ?a

3 a. yip ?a heh.. baht b. yip ?a keh, hčahp ?a c. I yip ?a, čahp
te ?a II yip ?a, čahp te ?a ?a

4 a. čahp ?a keh, ma sk'an b., c., d. correct

6 a. yip ?a hek či? ta b. correct

7 a. me ?a keh čahp htebuk ?a

9 a. yip čahk ?a

10 a., b. correct c. yip ?a keh, yip čahpuk ?a

11 a. I yipal kah tebuk ?a II correct

12 a., d. correct b. yip ?a keh čahp te?e c. yit ?a keh čahp htebuk ?a

13 a. čahp htebuk ?a b. yip ?a keh, lom čahp htebuk ?a

14 a. čeb tebuk ?a b. I yip čuhke, čuhtebuk ?a II correct

16 a. yip ?a keh.. č... keh čahp htebuk ?a b. yip ?a keh čah..p htekbuk
?a

21 a. yip čebuk... čeb.. ?ane.. yip... yip.. čebuk ?a
b. yip..?a keh, š.. čip htebuk ?a

22 a. yip ča? teluk ?a b. correct

23 a. yip ?a, kehčah htebuk ?a

26 a. yip ?a keh, ?a čahp tibu,.. čahp htebuk ?a b. correct

27 a. yip čahp htebuk ?a b., c. correct

31 a. yip ?a keh, yip... čahp htebuk ?a b. correct

36 a. yip, keh čahp htebuk ?a b. correct

Sentence no. 51 yakal ta sbohel sk'al
'He is in the act of cutting his cornfield'

yakal - stative verb, 'he is in the act'
ta - preposition, 'of'
sbohel - 3rd sing poss. + verbal noun, 'its cutting'
sk'al - 3rd sing poss. + noun, 'his field'

1 a. bohel hk'al b. yakal ?a bohel k'al c. boh... yakal ta boel k'al

2 a. yakal ta šbohel šk'al

3 a., c. yakal ta bohel sk'al b. yakal ta sbohel sk'ab

9 a. yakal bohel sk'al

13 a. yakal sbohel sk'al b. correct

14 a. štas.. ta... ya štal ta sbohel sk'al b. correct

16 a. yakal ta sk... bohel sk'al b. correct

29 a. yakal ta bo... sbohel sk'al b. correct

36 a. correct b. yakal ta bohel sk'al

Sentence no. 52 ya hle hpošil te mač'a ya sna? poštael
'I seek a curer who knows curing'

ya hle - tense + 1st sing subj. + tv root, 'I seek'
hpošil - noun, 'curer'
te mač'a - relative pronoun, 'who'
ya sna? - tense + 3rd sing subj. + tv root, 'he knows'
poštael - verbal noun, 'curing'

1 a. mmm poštael b. ma? poštahel c. la? poštael

2 a. ma hna? bit'il ?a špoštael

3 a. ya hle hpošil ma?... mač'a sle hpošil b. ya sna?.. yas... ya hle hpošil

4 a. ya sle poštael b., d. ya hle hpošil mač'a ya sna? poštael
c. ya hle poštael mač'a ya sna? poštael

5 a. ya hle hpošil mač'a ya sna? b. ya hle hpošil te mač'a ya sna? špoštael c. correct

6 a. ya hna? poštael b. ya sna? poštael

7 a. ya hle hpošil me.. s.. ya yič' poštael

8 a. ya hle hpošil mač'a ya sna? poštael

9 a. ya hle po...mač'a sna?.. poš...štael

10 a., c. ya hle hpošil mač'a ya sna? poštael
b. ya hle hpošil mač'a ya sna?... sla?... sleel.. hpošil

11 a. ya hle hpošil mač'a sna? poštael

12 a. hahle hpošil mač'a ya sna? pošil b. ya hle hpošil te mač'a sna? poštawaneh c. ya hle hpošil mač'a..l... le pošil
d. ya sle hpošil leh..l.. mač'a s.. na? poštael

13 a. ya hle.. ya sna? poštael b. ya hna? poštael

14 a. ya hle hpošil mač'a slna b. ya sna?... ya hna?, me shulel, poštael mač'a sna? poštael

15 a. ya hle hpošil mač'a sna? poštael b. correct

16 a. ya hle hpošil te mač'a ya sna? poštail b. correct

18 a., b., c. ya hle hpošil mač'a ya sna? poštael

19 a. ya hle hpošil mač'a ya sna? poštayel

20 a. ya hle hpošil te.. mač'a ya hna... č'a sna? poš... pošul...poštael
b. correct

21 a. ya hle hpošil mač'a sna? hpošil b. ya hle hpošil mač'a sna? poštael

22 a. correct b. ya hle hpošil te mač'a sna? poštael

23 a. ya hle mač'a ya sna? poštael

24 a. ya hle hpošil mač'a ya sna? poštael

25 a. ya sn... ya hle hpošil, mač'a ya sna? špoštael

26 a. ya hna?.. hpošil te mač'a ya sna? poštael b. correct

27 a. ya hle hpošil mač'a ya sna? poštael b., c. correct
d. ya hle hpošil mač'a ya sk'an poštayel

29 a. ya sna? hpošil te mač'a ya sna? poštael
b. ya hna? hpošil te mač'a ya sna? špoštael

30 a. ya hle hpošil mač'a ya sna? poštael b., c. correct

31 a. ya sn... ya hle hpošil mač'a sna? poštael

32 a. ya hle te pošil mač'a ya sna? te pošael

33 a. ya hle hpošil te mač'a ya sna? poštayel

35 a. correct b. ya hna?... ya hle hpošil te mač'a ya sna? poštael

36 a. ya hle mač'a ya sna? pošil ya špošta b. ya hle mač'a ya sna? poštael

Sentence no. 53 k'alal me lah stenik, ya sk'ehik ta ?ala cuetik
'When they finish mashing it, they put it in little cups'

k'alal me - clause introducer, 'when'
lah - iv root, 'finished'
stenik - 3rd plural subj. + tv root (ten), 'they mash (it)'
ya sk'ehik - tense + 3rd plural subj. + tv root (k'eh), 'they put (it)'
ta - preposition, 'in'
?ala - diminutive, 'little'
cuetik - noun (cu) + plural (etik), 'gourds'

1 a. k'ahtik yas ču?etik b. k'alal tal čul..č'uh.. ta čul, cu
c. yič' sk'aitik suetik

2 a. ma šna? šk'el ta ?ala č'ul... ?ala hču? yek.. mmaštun kaltik

3 a. sna?... sk'eh ta ?ala cuetik b. ya sk'eh ta ?ala cuetik
c. ya sk'ehik ta ?ala cuetik

4 a., b., c. me lah stenik, ya sk'ehik ta ?ala cuetik
d. k'alal me ya šlah stenik..te k... ya sk'ehik ta ?ala cuetik

5 a. k'alal ta me la sk'ehik ?ala cuetik b. k'alal me lah stenik te ya sk'ehik te... ya sk'ehik te ?ala cuetik c. k'alal me lah stenik te ?ala cuetik

6 a. ya sk'ehik te ?ala cuetik b. la stenle ya sk'ehik ta ?ala cuetik

7 a. ya sk'ehik ta ?ala cuetik

8 a. k'alal ta me lah stenik, ya sk'ehik ta ?ala cuetik

9 a. mač'a sk'esik ta cuetik

10 a. k'alal ya.. sk'ehik ta ?ala cuetik b. k'alal me lah stei...
stenik ta..?ala cuetik c. k'alal me lah stenik, la sk'ehik ta ?ala
cuetik

11 a. me lah sk'ehik ta... sle sle stenik ta cuetik

12 a. k'alal ya sle sk'ehik tet ?ala cuetik b. te mač'a ya sk'ehik te
?ala cuetik c. k'alal ya stenik ?al... ya stenik ?ala cuet... ?ala
cuetik d. k'alal ya sl... ya stenik te ?ala, sk'ehik ta ?ala cuetik

13 a. k'alal la stenik ya s... ya yak'ik tale cu... cu
b. k'alal me lah stenik, k'ehik ta ?ala cuetik

14 a. ya sk'an ?ala cuetik b. k'alal te lah stenik ta ?ala cuetik
ya sk'ehik

16 a. k'anal ta na stenik te sk'ehik te cuetik
b. k'alal te lah stenik, bit'il ya s... sk'ehik ta cuetik

17 a. k'alal te me lah stenik te k'ala cuetik
b., c. k'alal me lah stenik, sk'ehik ta ?ala cuetik

18 a., c. correct b. k'alal me ya slah... me lah stenik ya k'ehik
ta ?ala cuetik

19 a. me lah stenik la ya sk'ehik ta ?ala cuetik

20 a. k'alal me lah stenik ta ?ala c... ya sk'ehik ta ?ala cuetik
b. k'alal me lah stenik, s... sk'ehik ta ?ala cuetik

21 a. k'alal ya sn... ya sna? ?ala cuetik
b. k'alal te la slahinik, sk'ehik cuetik

22 a. k'alal me lah stenik, sk'ehik ta ?ala cuetik
b. k'alal me ya slah steni ya hk'ehtik ta ?ala cuetik

23 a. bit'il k'alal slah ya šlah stenik ya sk'ehik ta cu

24 a. k'alal bit'il stenik ta ?ala cuetik

25 a. k'alal me lah stenik ta... ya sk'ehik ta ?ala cuetik

26 a. mm.. ya me lah sk'ehik, y... ya sten ta ?ala cuetik
b. me lah stenik, ya sk'ehik ta ?ala cuetik

27 a. k'alal te me lah stenik, ya sk'ehik ta ?ala cuetik
b. k'alal te me lah stenik, sk'ehik ta ?ala cuetik

28 a. ta me lah stenik, ya sk'ehik ta ?ala cuetik

31 a. te s... ya stenik ya sk'ehik ta ?ala cuetik

32 a. me ?ala stenik me ya sk'ehik ta ?ala cuetik

34 a. me... k'alal la stenik ya sk'ehik ta ?ala cuetik

36 a. ma la stenik ya sk'ehik ta ?ala cuetik
b. ma s... la stenik ya s... sk'ehik ta ?ala tucetik

Sentence no. 54 mutetik ?ay ta ta hamalal
'There are chickens in in the clearing'

mutetik - noun + plural, 'chickens'
?ay - inflectible particle, 'there is/there are'
ta - preposition, 'in'
hamalal - noun, 'clearing'

1 a. I hamal, mutitik mah ma hta tal II mama mal b. I muktetik mamal II mutetik mamal c. I le [illegible]tetik II to tek ?a mut.. hamalal

2 a. ?ay ta hamalal

3 a. mutetik ta hamalal..ta tah b. mutetik ta ta.. hamalal
c. mutetik ta h... táh ta hamalal

4 a., b. mutetik ?ay ta hamalal c. mutetik ?ay ta... tata hamalal
d. mutetik ?ay ta ta ta ta.. hamalal

5 a. mutetik ?ay ta halal b. mutetik ?ay ta ta hamama c. correct

6 a. mutetik ?ay ta hamalal b. correct

7 a. mutetik ?ay ta hamalal

9 a. mutetik ?ay ta hamalal

10 a., c. mutetik ta táh ta hamalal b. ?ay ta ta hamalal

11 a. ?ay mutetik ta hamalal

12 a. mutetik ?ay ta hamalal b. te mutetik ?ay ta hamalal
c. mutetik ?ay ta wá hamalal d. mutetik ?ay ta ta h... ta ta hamalal

13 a., b. mutetik ?ay ta hamalal

14 a. mutetik ?ay ta hamalal b. mutetik, ?ay ta.. m... hamalal

15 a. mutetik ?ay ta hamalal b. mutetik ?ay ta.. ?a hamalal

16 a. mutetik ?ay ta hamalal b. correct

17 a., c. correct b. mutetik ?ay ta ta halamalal

18 a., b., c. mutetik ?ay ta hamalal

19 a. ?ay ta... mutetik ?ay ta tá, ?ay ta hamalal

20 a., b. mutetik ?ay ta hamalal

21 a. mutetik ?ay ta hamalal b. correct

22 a. ?ay.. mutetik ?ay ta ta hamalal b. correct

23 a. mutetik ?ay ta hamalal

25 a. ?ay... ?ala mutetik ?ay ta ta hamalal

27 a., b., c. mutetik ?ay ta hamalal

28 a. mutetik ?ay ta tá ta hamalal

30 a., b. mutetik ?ay ta hamalal c. correct

31 a. ya mutetik ta ?ay ta hamalal

35 a. mutetik ?ay ta ta haml... hamalal
b. mutetik ?ay ta ta hamal... hamalal

36 a. mutetik ?ay ta tá ta hamalal b. correct

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